S4C /

Technical Standards for Delivering Programmes to S4C

v2.4 | November 2026

This document is a guide to the technical standards required by S4C's programme suppliers.

The Standards include:

Technical Specifications, i.e. the technical production standards which must be adhered to, and the parameters which all material must meet to be compliant with the DPP's AS-11 standard for content delivery to S4C.

Picture and Sound Quality requirements, which also form a binding obligation on producers of material. Assessment of quality is by nature subjective and is highly dependent on the nature of the programme. Some of the Quality Requirements are expressed in relative terms ("reasonable", "not excessive" etc), and it will be necessary to make a judgement as to whether the quality expectations of the intended audience will be fulfilled, and whether the broadcaster will feel that value for money has been achieved.

Delivery Requirements, which specify the form and layout of the programme material.

Every programme submitted for transmission must satisfy a Quality Control process specified by S4C. This applies equally to any promotional material supplied direct to S4C. Any programme failing the QC process for content delivered by file may be rejected and returned to the supplier for repair.

File delivery to S4C's playout provider requires a recognised QC report.

A list of preferred AQC devices can be found on page 12.

Technical Responsibility and Contacts

General Responsibility

S4C is required to ensure that broadcast programme technical quality is maintained to a satisfactory standard.

Any queries should, in the first instance, be directed to the Archive and Content Delivery Team. Contact details can be found for this team on page 26.

Any detailed technical queries should, in the first instance, be directed to the Technical Team via email – cto@s4c.cymru.

Technical Liaison

The main S4C round-the-clock point of contact for technical enquiries affecting immediate (defined as "on the day") delivery is the Media Control Team (MCT) in BBC Central Square.

The main point of contact for technical enquiries affecting live transmissions is the Master Control Area (MCA) in BBC Central Square.

Contact information for both teams can be found on page 26.

For all other enquiries please contact the Commissioner, the Archive and Content Delivery Team, or visit the S4C production web site:
https://www.s4c.cymru/en/production/page/1154/guidelines/

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1. General Quality Requirements

1.1 Picture Quality

The picture must be well lit and reasonably but not artificially sharp.

The picture must be free of excessive noise, grain and digital compression artefacts.

The picture must be free of excessive flare, reflections, lens dirt, markings and obstructions (e.g. lens hood), and lens aberrations.

Movement must appear reasonably smooth and continuous and must not give rise to distortions or break-up to moving objects or cause large changes in resolution.

The picture must be free of excessive black crushing and highlight compression. Hard clipping of highlights (e.g. by legalisers) must not cause visible artefacts on screen.

There must be no noticeable horizontal or vertical aliasing, i.e. jagged lines, field or frame rate fluctuations in fine detail.

Colour rendition, especially skin tones, must be consistent throughout, and a realistic representation of the scene portrayed unless it is altered as an editorially essential visual effect.

The picture must be stable and continuous - i.e. no jumps, movements, shifts in level or position.

There must be no visible contouring / artefacts caused by digital processing. Quantisation noise must not be apparent.

There must be no noticeable spurious signals or artefacts e.g. streaking, ringing, smear, echoes, overshoots, hum, cross-talk etc.

1.2 Sound Quality

Sound must be recorded with appropriately placed microphones, giving minimum background noise and without peak distortion.

The audio must be free of spurious signals such as clicks, noise, hum and any analogue distortion.

The audio must be reasonably continuous and smoothly mixed and edited.

Audio levels must be appropriate to the scene portrayed and dynamic range must not be excessive. They must be suitable for the whole range of domestic listening situations.

Stereo audio must be appropriately balanced and free from phase differences which cause audible cancellation in mono.

The audio must not show dynamic and/or frequency response artefacts as a result of the action of noise reduction or low bit rate coding systems.

1.3 Access for People with Disabilities

There are two separate categories of obligations.

Firstly, the Equality Act 2010 requires service providers to take positive steps to make their services accessible to people with disabilities. It states that where a service provider offers or provides services to members of the public, the provider will have to take such steps as is reasonable to make it easier for disabled people to make use of the service. Broadcasters are service providers under the Equality Act and this duty

therefore applies to them, except in relation 'the provision of a content service'. In other words, editorial and scheduling matters are exempt.

Secondly, Ofcom's *Code on Television Access Services,* made pursuant to the Communications Act 2003, sets out requirements for broadcasters (monitored by Ofcom) to provide subtitling, sign language and audio description services, so suppliers may be asked to provide appropriate additional material.

Pursuant to the Media Act 2024, Ofcom will also now need to prepare and publish setting out accessibility requirements for "Tier 1 services". S4C Clic is likely to be a "Tier 1 service".

2. Technical Requirements – Video

2.1 High-Definition Format

All material delivered for UK HD TV transmission must be:

- 1920 x 1080 pixels in an aspect ratio of 16:9, as defined in EBU Tech 3299 S2
- 25 frames per second (50 fields) interlaced – known as 1080i/25, top field first.
- Colour sub-sampled at a ratio of 4:2:2 (4:2:0 is acceptable for live broadcasts)
- Colour primaries should follow ITU-R BT.709

The HD format is fully specified in ITU-R BT.709-6.

Origination

Material may be originated with either interlaced or progressive scan.

Interlaced and progressive scan material may be mixed within a programme if it is required for editorial reasons, or the nature of the programme requires material from varied sources. This must be agreed with S4C at the commissioning stage.

Post-production

Projects must be set to export progressively shot material as interlaced. Electronically generated moving graphics and effects (such as rollers, DVE moves, wipes, fades and dissolves) must be generated and added as interlaced to prevent unacceptable judder. Scan type should be the same across all footage.

Film motion or 'film effect'

It is not acceptable to shoot in 1080i/25 and add a film motion effect in post-production. Most High-Definition cameras can capture in either 1080i/25 or 1080p/25. Where film motion is a requirement, progressive capture is the only acceptable method.

Conversion from 50 progressive frames per second material to 25 progressive frames per second is permitted, provided that the frame conversion process does not produce excessive motion judder or image softening or visible frame blending; and that an appropriate shutter speed has been used.

Field dominance

Programme shot at 50 frames per second progressive (50p) shall be converted to interlaced (25i) in a way that each individual progressive frame is converted into a single interlaced field.

Programmes shot at 25 frames per second progressive (25p) shall be converted to interlaced (25i) with PsF method. (A progressive frame is divided into two segments, with the odd lines in one segment and the even lines in the other segment).

Cuts in material must happen on frame boundaries (i.e. between field 2 and field 1). Motion on PsF material must always occur between field 2 and field 1 (i.e. field 1 dominance).

Note – it is possible to shoot material at 1080p/50. If this is done, the correct 2- frame marker phasing must be maintained when down-converting to 1080i/25 or 1080psf/25.

2.2 Video Line-up

Programme video levels must be accurately related to their associated line-up signals.

Video line-up must be colour bars of the type known as EBU 100% or 75% (100/0/100/0) or (100/0/75/0) and filling the 16:9 raster. SMPTE pattern bars are not acceptable. For required durations, see section 4.2 ('Timecode').

2.3 Video Levels and Colour Gamut (illegal signals)

High-Definition digital signals will be assessed according to the recommendation ITU-R BT709-5 Part 2.

Measuring signal levels

Digital video levels are usually measured with a device which displays a trace like a traditional waveform monitor. This gives readings in mV (emulating an analogue signal), or as a percentage of the allowable levels.

The limits of signal levels are defined by reference to a nominal black level and a nominal white level. Black level comprises R, G and B all at zero (or 0% or 0mV) and white level is all three components at 100% or 700mV.

In a picture signal, each component is allowed to range between 0 and 100% (or 0mV and 700mV). This equates to digital sample levels 16 and 235 (8-bit systems) or 64 and 940 (10-bit systems).

Tolerance of out of gamut signals

In practice it is difficult to avoid generating signals slightly outside this range, and it is considered reasonable to allow a small tolerance:

RGB components and the corresponding Luminance (Y) signals must be between -5% and 105% (-35 and 735mV).
This equates to digital sample levels 20 and 984 (10-bit systems).

Slight transient overshoots and undershoots may be filtered out before measuring, and an error will only be registered where the out of gamut signals total at least 1% of Picture area. Many monitoring devices will detect errors to this specification.

For more information, see EBU recommendation R103.

2.4 'Blanking'

HD images must fill the active picture area.

No 'blanking' errors are permitted on new, up-converted, or archive material.

However, a two-pixel tolerance will be permitted during CG or complex overlay sequences where key signals, graphic overlays or other effects do not fully cover the background image. Where animated key signals or overlays cause moving highlights at the edge of the active image it is preferable to blank these pixels completely.

A note of the timecodes and reasons for these errors should accompany the delivered programme.

2.5 Aspect Ratio

All high-definition programmes - except as below - must be delivered in 16:9 Widescreen. This means that the active picture must fill a 16:9 screens vertically and horizontally without geometric distortion.

Non-16:9 aspect ratios

At the discretion of S4C, programmes may be delivered with an active picture at a non-16:9 aspect ratio, as Letterbox/Pillarbox. Programmes may use wider picture ratios if agreed in advance by S4C.

Movies and programmes with picture ratios of 2.00:1, 2.35:1/2.39:1 (21:9) or 1.85:1 should be centred vertically between black bars in a 16:9 frame with no geometric distortion.

Any other variation of aspect ratios should be established and discussed with S4C before delivering.

Floating images

Short sequences of images surrounded by black borders (floating images) may be used for artistic effect. Note however, that widescreen consumer TV sets operating in Auto Zoom mode often interpret large black borders at the top and bottom of the screen as letterbox, so are likely to enlarge the picture.

The resulting unpredictable zooming can be annoying for the viewer and undermine the artistic intent.

If used, the black space around floating images must be consistent across sequences.

'Pillarboxed' HD material

Some 'pillar-boxed' material is acceptable at the discretion of S4C where it has been acquired on a medium that has the capability to be transferred to a legitimate HD resolution - for example, 35mm film shot using 4-perf at an aspect ratio narrower than 16:9. The pictures must be centrally framed in a 16:9 raster with no geometrical distortion.

2.6 Archive Material

Archive material must meet all the requirements in this document, including those for up-converted SD video where relevant, except for the following:

General quality - archive

Archive material must be taken from the best available source, and any improvement or restoration work which could reasonably be expected must be done (for example grading, dropout repair or audio equalisation).

Aspect ratio – archive

Archive material should be zoomed to fill the 16:9 raster where possible without compromising the image quality or composition. Alternatively, it may be presented in a pillarbox/letterbox format, which:

- may be of an intermediate ratio between 4:3 and 16:9, but must be of consistent width across sequences,
- must be centrally framed in the 16:9 raster,

- must show no geometrical distortion,
- must have clean and sharp pillar-box edges (i.e. any video or film edge artefacts may need to be blanked)
- must be black outside the active picture, unless otherwise agreed by S4C.

However, please note: consumer TV sets operating in Auto Zoom mode may enlarge the picture to fill the screen horizontally. The resulting unpredictable zooming can be annoying for the viewer and undermine the artistic intent.

Safe areas - archive

Any captions or text already in the archive material should be kept within the caption safe area if possible. Exceptions should be noted in the accompanying documents.

2.7 Use of Non-HD material

Some high-definition programmes will contain some material from Standard definition originals, and sources which are not considered to meet HD broadcast standards, such as domestic camcorders. This material is called 'non-HD' in this document.

To maintain a high Standard and meet audience expectations the amount of non-HD material is limited to:

- Scripted content – up to 5% of the programme's total duration
- Non-Scripted content – up to 25% of the programme's total duration

Non-HD material must not be used for large uninterrupted sections of the programme, unless agreed by S4C in advance. Please contact the Commissioner for more information.

Non-HD material

Material acquired using the following methods or formats is considered to be below the high-definition standard and will therefore be treated as non-HD:

- HDV (from all manufacturers);
- All cameras that do not meet the requirements, or all codecs with bit rates below those specified in EBU R118 (for HD Tier 2L);
- Material generated or processed on 720-line equipment;

Up-converted SD video material

Particular care must be taken to deliver the best possible quality of up-converted material. In general, standard definition pictures must look no worse than the original after being up converted, post processed and down converted.

Standard definition video contains a half-line at top and bottom on alternate fields. This must be removed on up-conversion to HD or it will introduce visible flickering at top and bottom of the frame.

Any VITC or switching signals visible at the top of SD material must be removed. Any line blanking from SD signals must not appear in the HD conversion. For these reasons it is necessary that all SD material is zoomed in by a small amount during up-conversion.

2.8 Use of Film

Any use of film within S4C programmes must be agreed with the Commissioner in advance of delivery.

2.9 Use of Artificial Intelligence (AI)

Any use of artificial intelligence in the creation and delivery of S4C programmes must be agreed with the Commissioner in advance of delivery and must follow S4C's guidelines on the use of Artificial Intelligence. You can find S4C's guidelines here: https://media.cms.v3.s4c.cymru/media/media_assets/51dbdeeb-61b8-4c6e-9c26-52802a196c56.pdf

2.10 Photosensitive Epilepsy (PSE)

Flickering or intermittent lights and certain types of repetitive visual patterns can cause serious problems for viewers who are prone to photosensitive epilepsy. Children & teenagers are particularly vulnerable.

All UK Television channels are subject to the Ofcom Broadcasting Code (December 2020) which states:

"2.12: Television broadcasters must take precautions to maintain a low level of risk to viewers who have photosensitive epilepsy. Where it is not reasonably practicable to follow the Ofcom guidance, and where broadcasters can demonstrate that the broadcasting of flashing lights and/or patterns is editorially justified, viewers should be given an adequate verbal and also, if appropriate, text warning at the start of the programme or programme item."

The full Ofcom guidance for Harm & Offence (which includes PSE testing) is available here: https://www.ofcom.org.uk/tv-radio-and-on-demand/broadcast-standards/section-two-harm-offence/

Testing for flashes and patterning

All programmes for file delivery must be tested using any file-based PSE device that meets the guidance by Ofcom.

The DPP maintains a list of devices that broadcasters will, at their discretion, either test the programme during the Quality Control process, or will require either indication of a pass (or a relevant FPA pass certificate) to be delivered alongside the file.

Manufacturer	Product Version	Algorithm
Interra	Baton v7.4 or later	ITU-R BVT.1702 2018
Cambridge Research Systems	Harding-FPA Desktop v3.5 or later	'Ofcom'
Vidcheck	Vidchecker v8 or later	Vidcheck PSE v5.1
Venera	Pulsar v4.3 or later	FPA v3.4

S4C requires a PSE report (pass certificate) to be delivered with all programmes.

- PSE reports must be in PDF format and named according to the naming convention – set out on page 18.
- The relevant PSE fields must be completed within the AS-11 file metadata. More information can be found on page 19.

It is recommended that live programmes produce and keep a copy of the PSE checks carried out during the final rehearsal (if there is one) and the transmission.

Any failure whatsoever will result in rejection of the programme, and any affected sections must be repaired and re-tested before acceptance.

PSE broadcast warnings

Verbal warnings may be added to programme announcements, or to the start of programmes, if content has failed a PSE test. An on-screen text warning may also be added to on-demand or online versions of the content.

Warnings may only be used in exceptional circumstances, when:

- the relevant content is completely integral and necessary to the context of the Programme, and
- permission to use the relevant content has been cleared by S4C and documented in writing by those responsible for commissioning/editorial content.

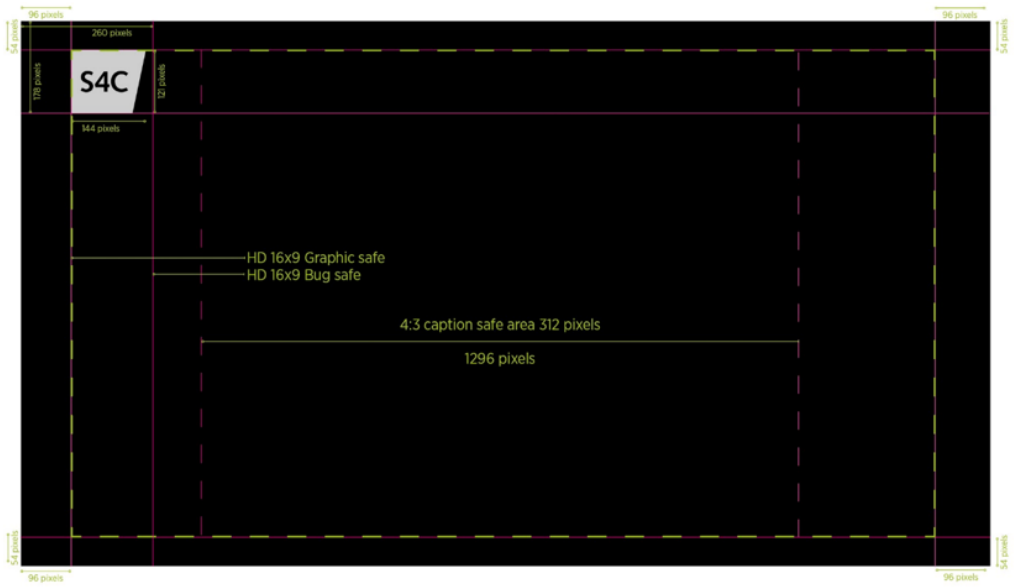
The Presentation and Continuity Lead (or a nominated deputy) must provide approval for verbal or on-screen text warnings. A programme producer cannot authorise the use of warnings for material that fails a PSE test.

2.11 Safe Areas

Captions must be clear and legible and must be within the safe areas specified. All font sizes must be legible as HD and also after down conversion for the SD viewer. Certain programmes distributed internationally may need to follow the 4:3 safe area.

S4C uses the following specifications for HD safe areas, based on EBU Recommendation R95 for 1920x1080 (interlace):

	Percentage (%) of active picture	**HD pixels (inclusive)**
16:9 safe	90% of Width 90% of Height	96-1823 54-1025
16:9 'bug safe' *(to the right of bug)*	81.5% of Width (At least 13.5% from left of frame, and at least 5% from right of frame)	260-1823
	90% of Height	54-1025
4:3 safe	67.5% of Width 90% of Height	312-1607 54-1025



Please note: content, end credit rollers, live feed graphics and sports clocks must take the position of the bug into consideration when placing content within the safe areas.

Programmes (such as feature films and some acquisitions) may be excluded from this requirement at the discretion of S4C.

End Credits

S4C has compiled specific guidance on positioning of end credits. You can find the guidelines here: https://media.cms.v3.s4c.cymru/media/media_assets/S4C_-_End_Credit_Guidelines_2025.pdf
For more information about credits please contact your Commissioner.

2.12 Logos / Bugs

All programmes carry the S4C bug – except for Cyw / Stwnsh programmes, which carry an animated Cyw / Stwnsh bug. All bugs are placed in the top left of frame at 30% opacity and are added to the programmes during transmission automatically.

Programmes are **not** to be delivered with the S4C bug embedded.

The position of the captions, bugs, logos or any other graphic images that may conflict with the S4C / Cyw / Stwnsh bug should be considered at the production stage, and flagged to the Commissioner / Head of Content Operations / Continuity and Presentation Lead in advance.

2.13 Standards Conversion

When standards converted material is included in a programme, Motion Compensation (sometimes known as Motion Predictive or Motion Vector) standards conversion is required.

Currently speed change is the preferred method of changing between 24fps (including 23.98) and 25fps standards. Due attention must be given to the audio.

Software standards conversion packages should also use Motion Compensation processing, if available. It is **not** permitted to use simple "timeline" conversion.

3. Technical Requirements – Audio

Broadcasters receive many complaints about unclear dialogue, the audience does not usually have "broadcast quality" audio reproduction equipment. It is the responsibility of the producer to ensure that dialogue is clear, easy to hear and to understand by a first-time viewer who is using consumer equipment.

It is no longer acceptable to deliver new programmes mixed to the old PPM6 specifications. Programmes must be mixed to comply with EBU R128.

All programmes must be compliant with the Programme Loudness and Maximum True Peak requirements. The following table is only for guidance on the true peak levels of different types of audio. At all times dialogue should be distinct and clear.

Material	Recommended Maximum Peaks
Uncompressed Music	**-3 dBTP**
Compressed Music (depending on degree of compression)	**-10 dBTP**
Heavy M&E (gunshots, warfare, aircraft, loud traffic etc.)	**-3 dBTP**
Background M&E (office/street noise, light mood music etc.)	**-18 dBTP**

3.1 Stereo Audio Requirements

Stereo tracks must carry sound in the A/B (Left/Right) form.

If mono originated sound is used, it must be recorded as dual mono, so that it may be handled exactly as stereo. It must meet all the stereo standards regarding levels, balance and phase.

Stereo line-up tones

Each stereo audio pair must have either EBU stereo or GLITS line-up tone (not a mix of both). Tone must be 1kHz. All tones must be sinusoidal, free of distortion and phase coherent between channels.

Digital Audio Reference level is defined as 18dB below the maximum coding value (- 18dBFS)

Stereo audio levels and measurement (loudness or volume)

All programmes must be compliant with EBU recommendation on loudness (EBU R128).

Our main aims are to ensure that dialogue is always clear and not compromised by music and effects. That all programmes seem to be the same volume and therefore the viewer does not have to keep adjusting their volume. EBU R128 is preferred to a PPM.

The target loudness, measured over the duration of the programme should be as follows:

- Non-live programmes: -23.0 LUFS (±0.5LU)
- Live (& as-live) programmes: -23.0 LUFS (±1.0LU)

In exceptional circumstances other target levels may be permitted if agreed by S4C.

The Loudness-to-Dialogue ratio should not exceed 5 LU.

It is recommended that the maximum true peak level should not exceed -3dBTP.

Stereo phase

Stereo programme audio must be capable of mixing down to mono without causing any noticeable phase cancellation.

Timing differences between audio channels must be no more than 0.2 samples (i.e. the timing between each channel of the six audio tracks of a surround sound signal).

Audio channel allocations

HD files must contain 4 or 16 channels of audio. Every audio channel should be in a separate essence track.

The EBU R48 or R123 code must be included in the metadata.

Audio Track Numbers					
EBU Reference	**Programme Type**	**1**	**2**	**3**	**4**
R48:2a	Stereo	Stereo Final Mix L	Stereo Final Mix R		
R123:4b	Stereo (with M&E)	Stereo Final Mix L	Stereo Final Mix R	Stereo M&E L	Stereo M&E R

Unused channels should contain digital silence.

3.2 Sound to Vision Synchronisation

The relative timing of sound to vision should not exhibit any perceptible error. Sound must not lead or lag the vision by more than 5ms.

Audio / Video sync markers

To assist in maintaining A/V sync through the post-production process, a 'sync plop' may be used. If the delivered programme leader contains one it must meet the following conditions:

- The sync plop must be between timecode 09:59:57:06 and 09:59:57:08
- The audio plop must be 1kHz tone on all tracks at -18dBFS (standard zero level)
- The duration of the vision flash must be 2 frames, to allow it to passthrough standards conversion successfully
- The duration of the audio plop must be 1 frame, starting on the first frame of the vision flash.
- The audio plop must be synchronous across all audio PCM audio tracks and with the video flash (within ±5ms)

4. Technical Requirements – File Delivery

Programme files delivered to S4C should be AS-11 UK DPP HD compliant, following the UK standard set by the DPP, unless by special agreement with the Broadcaster.

Under the AS-11 UK DPP HD specification, programmes are expected to be encoded as AVC Intra Class 100 – equating to an actual video essence data rate of approximately 113Mbits per second.

All audio tracks must be encoded as PCM with a sample rate of 48kHz at a depth of 24bits/sample.

Programme deliverables should be wrapped as MXF (Media eXchange Format) files.

Accompanying QC reports should be delivered as PDF files.

4.1 Naming Requirements

It should be noted that the DPP/AS-11 format specifies that every programme must have a unique production number in the metadata. It is important that this is adhered to.

The field for the AS-11 production number must follow the following format (using the contract production number which should **NOT** be confused with the AS-11 production number):

Programme Production Number Format	Example Filename
XXXXXX_XXX_Vnn_Dsc	I26555_004_V02_MAS

Production Number (5 to 10 characters)_Episode Number (3 digits)_Version Number (3 digits)_Type descriptor (3 characters)

More information about type descriptors (_Dsc) can be found below, under the 'Descriptor' section.

These details should also appear on programme clock.
If re-delivering content, these details must be amended accordingly.

Programme Files

The Requested Programme File Name is now the same as the AS-11 production number, conforming to the DPP/AS-11 standard.

Programme files delivered to S4C must be named thus:

Requested Programme File Name Format	Example Filename
XXXXXX_XXX_Vnn_Dsc.mxf	I26555_004_V02_MAS.mxf

Production Number (5 to 10 characters)_Episode Number(3 digits)_Version Number (3 digits)_Type Descriptor (3 characters).mxf

Note: the first letter of the Production Number, "V" for Version and the Type Descriptor all must be uppercase.

QC Reports

All reporting files will follow the same naming convention as the MXF programme files with the report name as a further identifier after the underscore.

- The Eyeball QC Report = _EYE
- The Photosensitive Epilepsy (PSE) Report = _PSE
- The Automated Quality Control (AQC) Report = _AQC

Some AQC devices combine the PSE and AQC reports and others allow manual entry for comments from the Eyeball QC test.

S4C accepts all options, as long as it is clear from the file name what is included.

Quality Control (Eyeball, PSE and AQC) reports must be delivered as PDF reports and must have the same Programme ID and Version Number as the programme file, as per below;

Requested Report Name Format	Example Filename
XXXXXX_YYY_Vnn_Dsc_EYE.pdf	I26555_004_V02_MAS_EYE.pdf
XXXXXX_YYY_Vnn_Dsc_PSE.pdf	I26555_004_V02_MAS_PSE.pdf
XXXXXX_YYY_Vnn_Dsc_AQC.pdf	I26555_004_V02_MAS_AQC.pdf
XXXXXX_YYY_Vnn_Dsc_AQC_PSE.pdf	I26555_004_V02_MAS_AQC_PSE.pdf

Descriptor

The type field descriptor (Dsc) must be one of the following 3 letter abbreviations, as agreed with S4C's Archive and Content Delivery department:

MAS Master
NAB No Advert Break
IVS In-vision Signing
BST Burnt-in Subtitling
OTH Other Version

Production Number Format	Example	Descriptor
XXXXXX_YYY_Vnn_MAS	I26555_004_V02_MAS	Master
XXXXXX_YYY_Vnn_NAB	I26555_004_V02_NAB	No Advert Break
XXXXXX_YYY_Vnn_IVS	I26555_004_V02_IVS	In-vision Signing
XXXXXX_YYY_Vnn_BST	I26555_004_V02_BST	Burnt-in Subtitling
XXXXXX_YYY_Vnn_OTH	I26555_004_V02_OTH	Other Version

4.2 Metadata

Please ensure metadata contained within the AS-11 file is compliant with the UK DPP HD standard. Specific queries about metadata fields should, in the first instance, be directed to the Technical Team via email – cto@s4c.cymru.

Production Number

The Production Number field should match the file name and the Contract Production Number as given by S4C. Please see section 4.1 for more information.

PSE Testing

Please ensure the 'PSE' field is set correctly in the Video Metadata, according to the results of the Quality Control process. You must also list the PSE device's 'Manufacturer' and 'Version' in the appropriate metadata fields.

Active Format Description (AFD)

Please ensure the 'AFD' field is set according to the agreed aspect ratio and video format of the programme.

Any use of burnt-in black bars (pillarboxing or letterboxing) on 16:9 aspect ratio programmes should be flagged up before delivery to the Commissioner and to the Archive and Content Delivery Team. Contact information can be found on page 26.

Language

For Welsh language programme deliveries, metadata fields describing primary audio language or on-screen text language should be set to **WEL**.

Access Services

All programmes are delivered without in-vision signing or subtitles embedded (unless agreed otherwise by S4C). Therefore, unless specifically delivering burnt-in subtitle or in-vision signing versions, please ensure that the 'Signing' and 'Open Captions' metadata fields are set to **No**.

4.3 Timecode

All programmes delivered on file must be laid out with elements in the following pattern relative to timecode:

Timecode	Duration	Video	Sound
09:59:30:00	20 secs	EBU bars (100/0/75/0 or 100/0/100/0)	Line-up tone
09:59:50:00	7 secs	Ident clock	Silence
09:59:57:00 *(optional)*	2 frames	2 frames peak white	1 frame tone (on first white video frame)
09:59:57:00	3 secs	Black	Silence
10:00:00:00	**Start of Programme Material**		
End of part hold (multi-part programmes)	5 secs (minimum)	Freeze or 'living hold'	Fade/cut to silence before marked end of part
End of programme hold	10 secs (minimum)	Freeze or 'living hold'	Fade/cut to silence

4.4 Start and end

Note that it is usual for sound and vision to be automatically cut to air on transmission, so early vision or sound is not normally required. Vision may fade up from black starting at 10:00:00:00 if desired.

All programmes must end with a fade or cut to silence before the intended end point. Any fade out or reverb must be allowed for within the programme duration.

Vision freeze or 'living hold' must be held for a further 5 seconds after the end point.

4.5 Ad breaks

For hard-parted programmes, each part must be preceded by a countdown clock as below (in section 4.6).

There must be **at least** 15 seconds of black and silence between the end of one part and the start of the clock for the following part. (i.e. after the 10 seconds freeze)

Each part must be recorded to begin at a 'full minute' - i.e. Timecode HH:MM:00:00

4.6 The ident clock

A countdown clock clearly displaying the following information must precede the start of programme and any subsequent part:

- Programme ID number in full, including version number
- Programme title
- Series and/or Episode number (if applicable)
- Part number (if applicable)

If re-delivering content, these details **must** be amended accordingly.

The clock must provide a clear countdown of at least 7 seconds, including a hand moving in 1 sec steps around a circular clock face.
There must be 3 seconds of black and silence between the ident clock and the material.

Clocks with only digital countdown are not acceptable.

There must be no audio tone or ident tone over the clock.

The clock may also display telephone contact numbers for the post-production facility and production company. The clock may display company branding.

4.7 Second Language Audio

S4C currently does not accept delivered programmes with second language audio embedded.

Delivery of live programmes with second language audio present must first be agreed with the Head of Content Operations, and Continuity and Presentation Lead.

4.8 Audio Description

S4C currently does not accept delivered programmes with audio description embedded.

Audio Description files must be delivered to S4C as WAV files, with two tracks only;

- Audio description will be on Track 1.
- Pan and Fade control signal will be on Track 2.

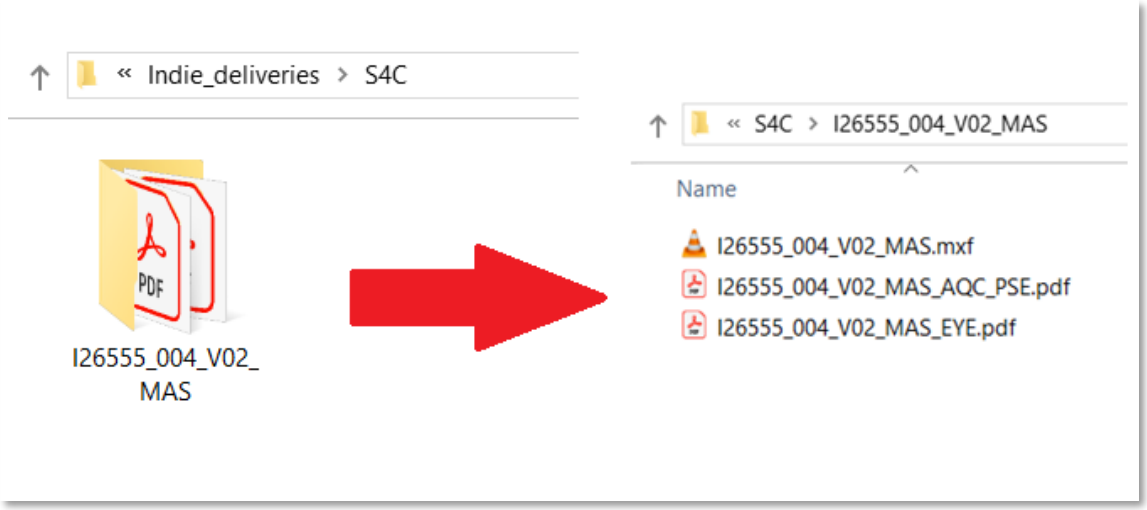
AD files must start at the same timecode as the programme (10:00:00:00 or agreed start of material).

For more information about delivering Audio Description for programmes please contact the Access Services Lead. Contact information can be found on page 26.

4.9 Uploading programmes to S4C

The programme MXF file and all accompanying PDF files are normally delivered to S4C via Signiant Media Shuttle. This service is managed by S4C's technical services provider (currently the BBC, from Central Square in Cardiff).

Programmes and documentation should be uploaded to S4C's Signiant portal contained in a folder that is named following the applicable Production Number Format, i.e.:



Companies will need to onboard onto S4C's Signiant platform before delivering.

Please contact CSqFileDelivery@S4C.cymru for more information.

If required, alternative arrangements for file delivery must be discussed and agreed in advance with S4C's Archive and Content Delivery Team. Contact information can be found on page 26.

5. Late Deliveries

The Commissioning Agreement specifies an actual date and time [12:00] by which programmes are expected to be delivered to S4C.

Any general changes requested to contracted delivery dates must be discussed and agreed in advance with S4C by first contacting the Commissioner, and then by emailing cyfleu@s4c.cymru with as much notice as possible.

It is expected that all programmes, even where it is agreed in advance that a programme can be delivered close to transmission time, should be delivered via Signiant in sufficient time that technical checking can be completed.

S4C's technical services provider (currently the BBC, from Central Square in Cardiff) request that all programmes arrive by at least:

TX minus (2.5 × slot duration)

For clarity, this calculation is based on the scheduled slot duration rather than the actual programme duration.

For example, a 30-minute programme scheduled for transmission at 20:00 must be received in full by 18:45.

This requirement applies to both file deliveries and line records. Delivery to the Media Control Team (MCT) must be completed by the relevant cutoff time. For file deliveries, the transfer via Signiant must be fully completed by the cutoff. For line records, the recording **must be completed by the cutoff**.

Therefore, in the example above, a 30-minute line record would need to commence no later than 18:15 to ensure that the recording is completed by 18:45.

The delivery cutoff is subject to a minimum turnaround time of one hour before transmission. Where the formula results in a shorter period-for example, for a 10-minute slot-the one-hour minimum will always apply.

The Media Control Team (MCT), based at BBC Central Square, is the main point of contact for technical enquiries affecting immediate delivery, defined as delivery taking place "on the day". MCT provides this service to S4C between 08:00 and 23:00, seven days a week.

Any delivery that needs to take place after 21:00 must be arranged with S4C's Archive and Content Delivery Team at least two weeks in advance, as additional staffing arrangements may be required.

Confirmation of the edit/facility location, a contact name (the producer or director) and contact number(s) should be made to S4C's Archive and Content Delivery Team at **least 24 hours beforehand**. If the delivery/transmission is over the weekend, confirmation should be made by 15:00 on Friday afternoon.

After completing the editing work, the Producer should confirm the actual duration and content of the programme by emailing the following people:

- S4C Presentation Controllers
- Archive and Content Delivery Team
- Continuity and Presentation Lead

Contact information can be found on page 26.

5.1 Changes to Delivery Terms

If the Producer is unable to meet the delivery terms, then they must contact S4C's Archive and Content Delivery team on email during office hours to explain the circumstances. Where appropriate, S4C may agree to amend delivery arrangements.

If delivery on file by the requested time is not possible, the Producer may request to transmit the programme live (if this option is feasible to both the Production and S4C). This option must be discussed and agreed with both the Archive and Content Delivery Lead and the Continuity and Presentation Lead as early as possible.

Transmitting programmes live to air into the specified slot is not acceptable without prior agreement from the contacts above. Contact information can be found on page 26.

If agreed, the programme will be treated as 'Live' and should follow the Technical Requirements for Live Broadcasts as set out in section 6 of this document.

S4C will transmit a standby programme if;

- communication has not been established; or
- if the file has not arrived at the time specified; or
- if there is no way to receive the programme in time for technical checks.

The main S4C point of contact for technical enquiries affecting immediate (defined as "on the day") delivery is the Media Control Team (MCT) in BBC Central Square. Contact information can be found on page 26.

5.2 Subtitling Copies

If a programme is unlikely to arrive in enough time to ensure that the Subtitling department can create the necessary subtitle files, S4C will need to receive a viewing copy of the programme along with any available scripts to prepare subtitles ahead of delivery. Copies should arrive as soon as possible before the first transmission.

Early viewing copies should be sent to isdeitlo@s4c.cymru, using the following format:

- MPEG-4 (.mp4)
- 720x576
- Between 1-2Mbps (1000-2000Kbps)

You must ensure that it is possible to download the content, by using file transfer software (i.e. Dropbox/WeTransfer or similar) rather than video sharing software (i.e. Vimeo/YouTube or similar).

6. Technical Requirements – Live Broadcasts

6.1 Arrangements for Linking

Unless expressly agreed otherwise, the programme supplier is responsible for arranging the necessary broadcast quality links to carry the signal to S4C's technical services provider (currently the BBC, from Central Square in Cardiff).

The full cost of delivery, including any end-to-end circuits between the event and Central Square, should be discussed and agreed early in the commissioning stage and included in the budget total noted on the brief/contract.

For live linear programme delivery, S4C would always expect two separate links to the technical services provider – a 'Main' and a 'Backup'.

For live delivery of 'web-only' or 'online exclusives', a single link without resilience is possible, but this must be agreed at the commissioning stage.

In all cases, all feeds should be of comparable broadcast quality, with as much separation in workflow and resilience (for content, connectivity and on-site power) as reasonably possible.

Fibre/Circuit Links

If intending to use S4C's contribution network via Arqiva circuits, this should be communicated clearly to S4C and to Cardiff MCA in Central Square as early as possible.

Satellite Links

If satellite links are used, S4C expects a minimum bandwidth of 9Mhz for each satellite link established to the technical services provider.

Since June 2025, all satellite downlinks for Central Square are managed by the pan-BBC Satellite Operations team. Initial satellite line-ups should be established with SatOps, rather than Cardiff MCA. Contact information can be found on page 26.

Cellular Links

If cellular network technology (e.g. LiveU) is used, S4C expects a guaranteed minimum bandwidth of 10Mbps (H.265) per incoming feed. Additional technical settings and configuration for these devices should be discussed as required with Cardiff MCA.

Any queries relating to other IP-based live programme delivery should in the first instance be directed to the Technical Team via email – cto@s4c.cymru.

6.2 Technical Production Contacts

The production should have a technical contact available as far as is possible in advance of the programme, to allow S4C to confirm technical planning and for dealing with any queries.

General arrangements for any late deliveries or live broadcasts, including outside broadcasts, should be agreed at the commissioning stage and communicated to all contacts noted on page 26.

There must be a technical contact available at the event throughout the line-up period, and during the programme itself.

6.3 Line-up / Signal Stability

The on-site facility must be able to originate audio and video line-up signals. These should consist of 100% colour bars (100/0/100/0) that fill the 16:9 raster, or 75% colour bars (100/0/75/0) if the vision signal is to be linked by satellite.

SMPTE pattern bars are not acceptable.

Programme video levels must be accurately related to their associated line-up signals.

Line-up signals must be available at least 45 minutes before the start of the programme and an engineer designated to liaise with Cardiff MCA in Central Square. It is strongly recommended that contact on the day is made well in advance of line-up, and all possible links are tested as soon as technically possible.

6.4 Audio Layout

S4C expects live programmes to arrive under the following track layout, unless agreed by S4C in advance:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CYM Mix L	CYM Mix R														

Second Language Audio

S4C expects live programmes with second language audio content to arrive under the following track layout, unless agreed by S4C in advance:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CYM Mix L	CYM Mix R	ENG Mix L	ENG Mix R												

Please note: for live linear programme delivery, the second language audio content pair (tracks 3 & 4) will be copied by Cardiff MCA to tracks 11 & 12 for onward delivery to S4C Continuity and Presentation. Any audio arriving to Central Square on tracks 11 & 12 may be overwritten by the second language audio content. Incorrect audio configuration can result in incorrect or missing audio on certain distribution platforms.

6.5 Outside Broadcasts – Information Form

The S4C Technical Information Requirements form for Outside Broadcasts can be found here: https://forms.office.com/r/EHDnAPr6Pu

Any questions or queries about the form, or about upcoming broadcasts, should in the first instance be directed to the Technical Team via email – cto@s4c.cymru.

For special live events, the Producer and/or Technical Supervisor will be required to attend pre-production meetings with S4C to discuss details. These meetings will be arranged by the Continuity and Presentation Lead.

Contact Information

Broadcast and Distribution Contacts:

Rhodri James, Chief Technology Officer

Rhodri.james@s4c.cymru – 07770 755291

Alessandro De Filippo, Technical Manager

Alessandro.DeFilippo@s4c.cymru – 07703 751653

(Technical Team – cto@s4c.cymru)

Anwen Thomas, Continuity and Presentation Lead
Anwen.Thomas@s4c.cymru – 07966 217992

Aimee Richardson, Archive and Content Delivery Lead
Aimee.Richardson@s4c.cymru – 07736 098402

(Archive and Content Delivery Team – AllinLibrary@s4c.cymru)

Meleri Wyn Flint, Access Services Lead
Meleri.Wyn.Flint@s4c.cymru – 07740 703589

Siwan Phillips, Head of Content Operations
Siwan.Phillips@s4c.cymru – 07786 702311

Technical Services Contacts (BBC):

BBC Cardiff Master Control Area (technical queries, live programmes)
Cardiff-MCA@bbc.co.uk – 029 2011 9300

BBC Wales Media Control Team (technical queries, file delivery)
Wales-MCT@bbc.co.uk – 029 2011 9307

BBC Satellite Operations (satellite line-up for live programmes)
020 8008 0900

S4C Presentation Controllers
Rheolwyr_Cyflwyno_Presentation_Controllers@s4c.cymru

For any information regarding font, placement of closing credits, copyright notices etc - please refer to the S4C Brand Guidelines on the Production website.

https://www.s4c.cymru/en/production/

Version Control			
	Date	**Author**	**Changes**
v2.0	May 2025	Alessandro De Filippo	Initial release
v.2.1	February 2026	Alessandro De Filippo Guto Thomas	Header graphic update Staffing changes Updates to section 6 – Live
v2.2	June 2026	Alessandro De Filippo	Updates to document links Staffing changes Technical – colour sub-samples for live programming (section 2.1)
v2.3	July 2026	Alessandro De Filippo	Staffing changes
v2.4	November 2026	Rhodri James	Updated safe areas Updated wording for late deliveries

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