

How do streamed services get to you?

You may have noticed in the 'Services at St Lawrence' section of the magazine there is a notice indicating whether that service is streamed or not. Streaming is what happens when consumers watch TV over Internet-connected devices. This means to watch a streamed service at home one must have a computer, laptop or iPad. We have been streaming services at St Lawrence since 2021 as a reaction to Covid, which prevented some people from coming to church. The equipment was installed in July 2021 and after some practice with it, the first service to be live streamed was the memorial service for Yvonne Fox, who was well-known in the village. Since then, we have streamed over 120 services. On average 30 devices have tuned in each week. I use the word devices as often more than one person is watching. The operators are Rhodri Morrison and the undersigned. A lot of things have to come together to get the broadcast to the viewer and we thought readers might be interested in a bit of the background on how that happens.

The first issue was how to get Wi-Fi into an 800-year-old Grade 1 listed church. BT would not talk to me because the church did not have a postcode (they didn't issue them in 1228!). I had to obtain this from Royal Mail or rather I told them what it should be and they agreed. The initial suggestion from BT was to run a cable across the road to the tower – a no-no for a grade 1 listed building. After experimenting for the first few months with using the mobile phone 4G network we eventually came up with a system which works reliably. This involved putting high speed fibre broadband in the Reading Room and then having an RF (radio) link across to the church. To stream services we need a minimum of 10Mb upload speed. This arrangement gives us 27Mb.

Operation of the streaming kit and the church sound system is carried out on the south side of the balcony next to the organ

using equipment which is easily dismantled and locked away between services. The operator controls both the streaming and church PA at the same time (see figure 1, the steaming kit is on top and the PA underneath). The hardware to capture the video consists of two broadcast quality cameras. A fixed camera on the balcony and a remotely operated pan, tilt and zoom (PTZ) camera in the centre of the church which can be directed towards any part of the building. The fixed camera can be zoomed remotely but not moved. The video signal is fed into a control box made by ATEM who manufacture the control desks used by the TV networks. It has a lot of features for switching between cameras but we mainly use the slow cross fade which is appropriate for church services. The current output image from the control box is displayed on a monitor screen positioned just above it. The sound also goes through this box but I will cover that later.

The critical component of the streaming system is the laptop computer which takes the signal from the control box and transforms it into a form that can be uploaded to YouTube. This is achieved using some clever software called OBS (Open Broadcaster Software) which is available. Fig 2 is a close up of the OBS screen – the right-hand screen is the transmitted image and the left-hand screen is the preview of the next image. In addition to the camera video, OBS allows us to create still images which can be mixed with the video such as the flower arrangements on the window sills for special events, which the cameras cannot see. OBS also enables us to create text which can be overlaid on the video or still images. We use this feature for titles at the beginning and end of services.

The audio mainly comes by taking a feed from the church PA system. One of the church radio microphones is dedicated to picking up the organ for streaming which, of course, the congregation in church don't need. The only other extra audio input is the ambient microphone which is positioned on the pulpit during services. This is needed to capture the natural sounds around us such as the murmur of conversation before

the service. A moving TV image with no sound appears strange. It is also used to pick up the congregation singing. The ambient microphone output is fed directly to the stream without going through the church PA system.

We use YouTube to broadcast the stream. For those not familiar with it, YouTube is a free online video sharing platform owned by Google which is accessible worldwide. It was decided at the beginning that for safeguarding reasons we would not use YouTube's 'Open' setting which would allow anyone to view the stream. Instead, we use their 'unlisted' mode which can only be viewed by people who have a link. A new link is generated for each service. This is emailed out to 55 people each week, who have indicated they would like to have it. Access is very simple, by just clicking on the blue URL link in the email the live broadcast or, using the same link, the recording can be viewed.

I would like to gratefully acknowledge the generous help I received from Robert Douglas at the Cathedral and Richard Laughton of St Thomas's in getting our streaming up and running. They were a few months ahead of me in installing streaming at those locations and willingly passed on their expertise.

If, after reading this, you are interested in receiving our streamed services or are having difficulty receiving them please contact me on 01722 416946 or email

jimandheatherplatt@gmail.com