

## Bristol, Gypsy Patch Lane, Structural Rehabilitation

Gypsy Patch Lane, Bristol is a main road forming part of a new Cribbs Patchway Metrobus route in South Gloucestershire. As part of an asset assessment programme a few years ago, a CCTV survey showed many defects throughout the length of the surface water culvert at Gypsy Patch Lane. The defective sections ran under the busy carriageway so, as an interim maintenance measure the local authority excavated a section of the road and installed a concrete slab over the pipe to protect it from further deterioration or collapse.



Fig 1: First Post Brexit Delivery January 2021



Fig 2: Courtesy of MDA Ltd

Doug MacKay, Project manager, South Gloucestershire Council consulted with Julian Britton, Critical Sewers Manager, Wessex Water and Matt Durbin Associates; specialist confined space and GRP structural relining installer to determine the most efficient and economic technique. As with many suburban roads, Gypsy Patch Lane is laden with many services within the carriageway, so rehabilitation of the existing pipeline through trenchless installation of 210m x DN800 structural GRP jacking pipe supplied by Amiblu was decided upon. As the contract was classed as emergency works, subject to time constraints and speed of execution the use of Amiblu's GRP pipes meant that MDA were able to remove the need for costly over-pumping and install the pipes in live flows, whilst minimising their work area to a single lane closure for uninterrupted access to local businesses.

During heavy rainfall over the summer of 2020, the same pipe was found to have suffered structural defects and root ingress through open joints and connecting laterals resulting in localised blockages of up to 90%. A new man-entry survey showed the pipe beneath the concrete slab to be deformed.

Major works were already under way in the area to replace a railway bridge on Gypsy Patch Lane, so South Gloucestershire Council took the opportunity to make improvements to the sewer in conjunction with the Network Rail works to minimise disruption, which was further aided by lighter traffic due to the regulations set in place for Covid-19 pandemic.

Under the Council's Climate Resilient Scheme, the task was to find and deliver a suitable solution before opening the road up to traffic and risking a pipe collapse; two options were considered; open-cut to replace the section of pipe or trenchless technology to reline the affected pipe with little disruption to the area.



Fig 3: Courtesy of MDA Ltd

**" Another man entry grp culvert relining project completed for an important client, I have to say the service from Amiblu creating a stress free delivery schedule to short time programme during these tough times was exemplary,"** – Matt Durbin, Managing Director, Matt Durbin Associates (MDA)

### PROJECT PARAMETERS

Country / City	UK, Bristol
Year of Construction	2021
Installation Time	4 weeks
Application	Sewer Rehabilitation
Installation	Trenchless Technology
Technology	Hobas
Total Length of Pipe	280m
Nominal Diameter DN (mm)	DN800
Nominal Pressure PN (bar)	PN1
Nominal Stiffness SN (N/mm <sup>2</sup> )	32,000
Client	South Gloucester Council
Contractor	Matt Durbin Associates Ltd
Consulting Engineer	South Glos Council

During the installation of the initial contracted 210m, a further 70m section of the pipe downstream required attention, so MDA undertook the additional works saving additional costs and disruption at a later date.



Fig 4: Courtesy of MDA Ltd. - installation complete

Amiblu jacking pipes are often utilised in pipe rehabilitation projects such as this as they offer a high compressive strength and, compared with conventional materials, an improved hydraulic coefficient. The hydraulic analysis carried out for Gipsy Patch Lane showed no reduction in hydraulic performance and as the pipes are designed to offer a service life in excess of 150 years with minimal maintenance, the life expectancy of this asset is greatly improved.

**"For this project, the Council had concerns about the risk of potential pipe collapse under traffic loading. The fact that road was already under a full closure due to an adjacent project to replace an old railway bridge meant that timing was critical for this project. It was essential that the work had to be completed before the proposed re-opening of the carriageway. Additionally, there was a limit to the funds available through the Climate Resilience budget to complete the scheme. We worked very closely with MDA and our designers to review the site constraints, risks to programme delivery and budget constraints to determine the most appropriate remedial solution. I was grateful for the time, input and patience spent by MDA during this period to explain the construction process and provide answers to all our questions and concerns in advance of making the final decision on the preferred option.**

**"Once the decision was made to proceed with the pipe-jacking option the process was relatively straight-forward and stress-free from the Council side of things. In the main this was down to the excellent communication, planning and execution of the works by MDA. Both projects were completed on-time, within budget and with minimal disruption to the public and businesses that rely on using Gipsy Patch Lane."** – Doug MacKay, Project Manager, South Gloucestershire Council

#### Amiblu Structural Relining Pipes

Amiblu pipes have a smooth, resin rich internal surface with high abrasion resistance which consistently prevents fouling and build up, leading to low maintenance costs and high flow rates even at low gradients. Both Jacking and relining pipes are supplied with in-line flush joints which prevent the intrusion of roots and further ensure the integrity of the asset. Available in diameters from DN300 to DN3600, in varying strengths and lengths. Amiblu's systems are cost effect, durable alternatives to traditional pipe systems.

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Fig 5: Courtesy of MDA Ltd. – minimal site storage