

DEVIZES CASTLE – DESIGN AND ACCESS STATEMENT: BELOW-GROUND DRAINAGE

Statement to accompany the Listed Building Consent Application for Devizes Castle below-ground drainage proposals

Please find attached plans and details for the proposed works to renew the below-ground drainage systems for the Devizes Castle. This pack includes the foul and surface water drainage network for the entire Devizes Castle Estate, up to the connections with the existing site-wide foul water drainage network (refer to ABA drawing 1969/020/300) for plans of the proposed below-ground drainage for the lower and upper levels of the site, respectively).

1.0 Condition of Existing Drainage System

A CCTV survey of the existing below-ground drainage arrangement and condition was undertaken in 2022 by Survey Solutions Ltd, and the recommendations of this report have informed the extent of the proposed scheme. The results indicated that the surface and foul systems ran in a combined system. Overall, most of the system was found to be in reasonable condition. However, several pipes were found to have structural defects, shown in Figure 1 and Figure 2. While these defects presented minor collapse risk in the short term, there is significant risk of further deterioration in the future. Therefore, remediation works to, or replacement of these pipes are recommended in order to provide adequate drainage systems for the Castle that meet the needs of family living and leisure expected in the 21st century.

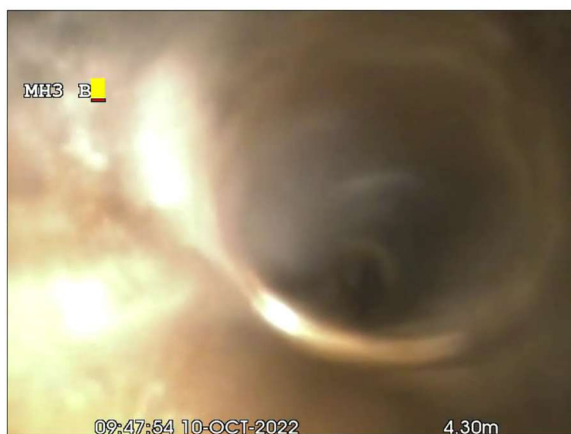


Photo: 10_3a, 00:00:00
4.77m, Joint displaced. Medium

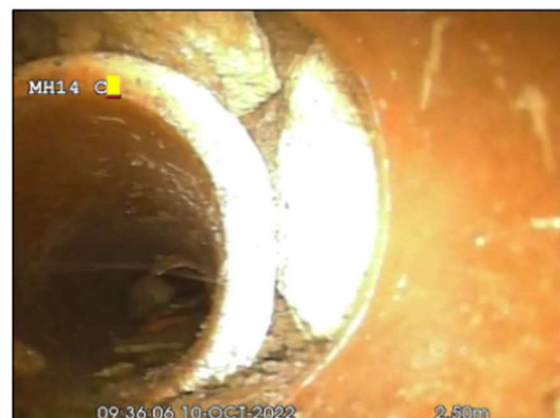


Photo: 15_4a, 00:00:00
2.55m, Joint displaced. Large

Figure 1 - CCTV Report showing existing foul water pipes with joint displacements.

The CCTV survey also revealed significant debris, reducing the effective cross-sectional area of the pipe to 50% in some incidences, as illustrated in Figure 2. Due to the extent of the blockages, it is unlikely that the affected pipes can be cleared by jet cleaning alone, so require replacing.



Figure 2 - CCTV Report showing existing foul water pipe junction with large joint displacement and excessive debris.

ABA also conducted a high-level photo survey of the existing drainage system in 2024 (Drawing 1969/020/101). A review of the two surveys to the drainage system revealed parts of the system have been added on an ad-hoc basis, with incidences of unsightly uPVC pipes running across roofs and terraces (Figure 3f), and some pipes discharging directly onto the property grounds (Figure 3e). Therefore, the existing system is ultimately not fit for purpose in most incidences so should be upgraded. It is recommended that proposed runs are in cast iron, connecting directly into the below-ground drainage system to improve the coherence, resilience and longevity of the system, as well as to help improve the visual appearance and the historic aesthetic of the building.

2.0 Options Considered for Proposed Drainage

The proposed drainage has been designed after careful review of, the CCTV drainage survey, the requirements set out by the M&E engineers above-ground drainage strategy and existing issues with the driveway drainage on the site. Rather than completely replacing the entire drainage system, the proposed solution retains existing below-ground drainage where appropriate particularly in the driveway, as shown in drawing 1969/020/300. Owing to the deterioration and parameters described above, most of the below-ground drainage around the footprint of the building is intended to be replaced with a new system following the same key routes. This compromise reduces the quantity of groundworks required, reducing any potential impacts to the building fabric and archaeology, which is discussed further in an accompanying Archaeological Statement and will be subject to a separate Scheduled Monument Consent.

The proposed system uses a combined foul and rainwater network of pipes, the majority of which replace damaged pipe runs in the same locations. While it is desirable to split foul from rainwater, to

allow for treatment prior to discharge, the existing drainage system does not have provision to deal with these water runs separately. Installation of a new retrofitted separated below-ground drainage system would require extensive groundworks, increasing the risk of damage to the existing building fabric. Therefore, this option, whilst looked at, was discarded.

Sleeving of the deteriorated existing pipes, using a polymer lining, was also considered. However, due to the level of defects in the system, this option was deemed not to be effective and would not provide the longevity required of a system under a historic structure of this type.

It has been observed that the deterioration of the driveway surfaces and retaining wall may be due to excessive levels of surface water running down the sloped driveway. Therefore, it is proposed to replace most of the external rainwater gulleys with new larger gulleys at more frequent centres, as indicated on ABA drawing 1969/020/300. Most gulleys are located on the driveway close to an existing retaining wall. Retaining the existing gulleys was considered, however, with the level of intended remediation works planned to the driveway, it seems a sensible time to improve the capacity of the system.

The proposed scheme also includes provision for the installation of additional surface water gullies to improve drainage on the site. These new gullies will require new rainwater pipes in order to connect them to the existing drainage system.

New below-ground pipes are to be made from cast iron. This provides adequate resistance to withstand traffic loads from the surrounding driveway and demonstrates enhanced longevity to the system, compared to other brittle materials available, such as fired earth.

3.0 Other Considerations

Trial pits have been consented and undertaken (ABA drawing 1969/020/200), confirming depths of existing retaining wall foundations. Generally, the new drainage is to be installed at a depth of no more than 1.2m below the existing ground level, and existing routes have been re-used where possible. This significantly reduces the risk of undermining any existing foundations and hence damage to existing building fabric.

Externally, the below-ground drainage routes have been coordinated with tree root protection zones.

Please refer to the BSA Heritage Archaeology Statement for archaeology considerations.

4.0 Conclusion

Overall, the below-ground drainage proposals have been designed to utilise as much of the existing drainage runs as possible and are considered to provide an appropriately sensitive scheme that minimises impact to historic fabric and undisturbed ground whilst facilitating a scheme that is suitable to meet modern family and living requirements expected of the 21st Century

5.0 Appendix A – Surface Photos of Existing Drainage System



(a)



(b)



(c)



(d)



(e)



(f)

Figure 3 - ABA Surface Photos of Existing Below-Ground Drainage System