



Westbury Hospital, Wiltshire

Headwall relocation Technical Note

Project No.	0654
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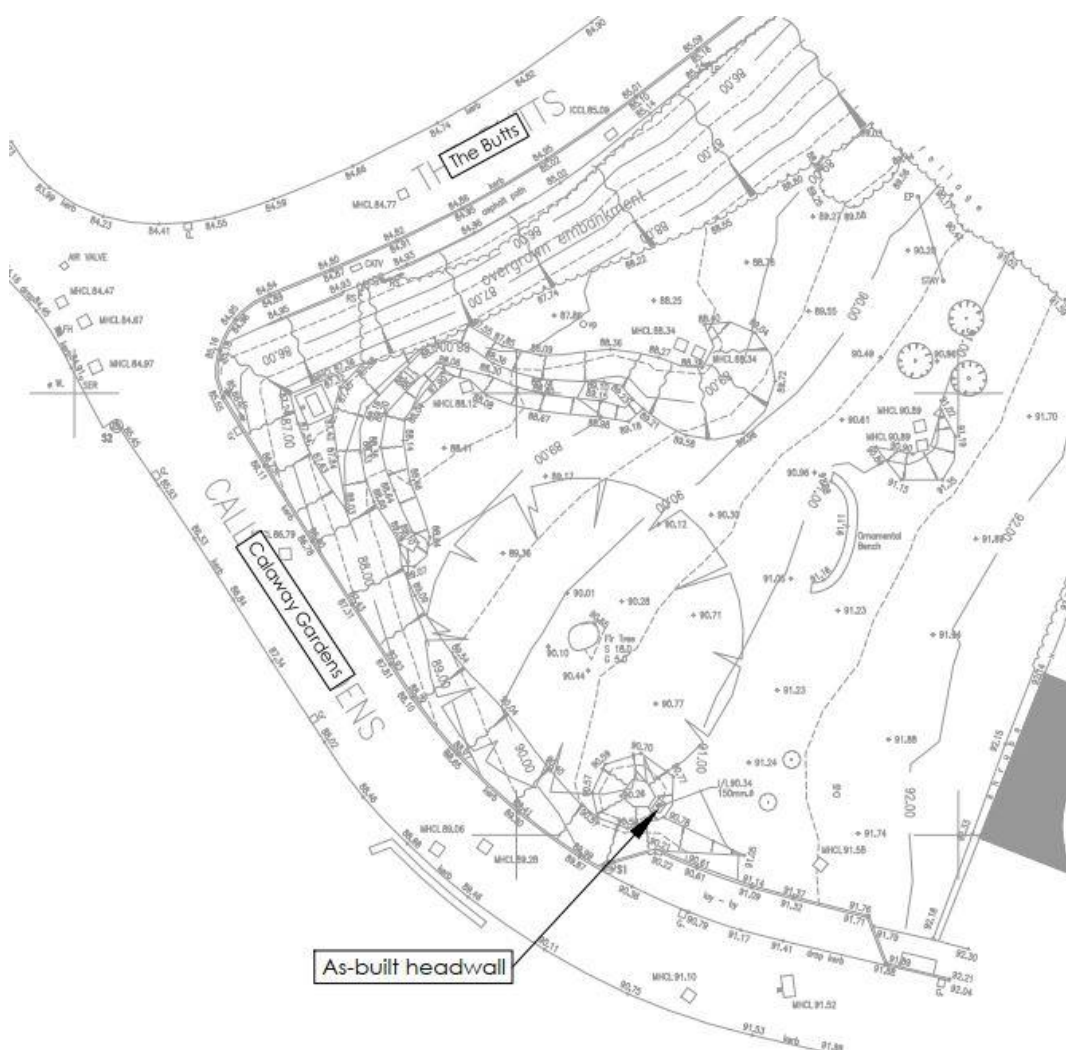
1 Introduction

- 1.1 The following drainage technical note has been produced for the Westbury Hospital re-development site following reports of flooding onto Calaway Gardens, emerging from the previously constructed exceedance headwall.
- 1.2 It is understood that reports were initially received following heavy rainfall at the end of 2023 and beginning of 2024.
- 1.3 This Note supports the re-positioning of the exceedance headwall to its current location, to improve drainage conditions and to provide greater overall protection and resilience from flooding.
- 1.4 This note also provides further clarification on any related comments or concerns raised by members of the public, in relation to the proposed drainage arrangements at the above site.

2 Previously Constructed Headwall

- 2.1 The previously constructed exceedance headwall received any residual flows from 2no. upstream infiltration basins. This headwall was initially constructed in an incorrect location.
- 2.2 Based on the previous as-built survey (Figure 2.1) it is evident that any emerging discharge would be directed towards Calaway Gardens, rather than dispersing over the wider public open space, as intended.

Figure 2.1 – Previously constructed headwall location



3 Amended Headwall Location

- 3.1 The exceedance outfall arrangements have been re-laid and the outfall re-positioned, as reflected by Figure 3.1 overpage. A new Althon pre-cast concrete headwall will be installed as identified on drawing 0654-PDL-101

and will include an impermeable liner to prevent contact between the concrete infrastructure and existing sub-soils, to reduce impacts on the adjacent trees (as agreed with the respective tree officer).

- 3.2 The revised location ensures that the headwall and earthworks remain outside the extent of any existing tree RPA's and that any emerging runoff will initially pond within the depression surrounding the headwall, before dispersing over the wider green space where it will be impounded by the landscaped bund at the lower edge of site, prioritising opportunities for infiltration and evapotranspiration. The upstream inspection chamber will have a sealed cover to reduce the risk of emergence upstream of the headwall.
- 3.3 The proposed exceedance arrangements within the site replicate the pre-development storage provision for the management of runoff from the upstream catchment but offer a greater wetted perimeter to increase infiltration potential so that the residual risk of flooding from upstream sources can be reduced.

Figure 3.1 – Headwall relocation design proposal



4 Other Drainage Considerations

- 4.1 The installation of grilles on smaller diameter pipes can impact their ability to convey surface flows, increase the risk of binding and can become an unnecessary maintenance obligation. In light of this, safety grilles are only required on pipes of ≥ 350 mm diameter (WRc, 2012). The inlet and outlet pipes which form part of the exceedance drainage arrangements are ≤ 150 mm diameter and therefore should not include the installation of grilles. The function and performance of this system should be secured through appropriate inspection and maintenance, in line with the approved Drainage Maintenance Plan.
- 4.2 The proposed exceedance drainage arrangements cannot discharge to the on-site surface water network which manages development runoff because this system has a peak discharge allowance, agreed with Wessex Water, for the discharge of development runoff only.
- 4.3 The flow control chamber to the south of the public open space in the north-west corner of the development limits how much runoff continues downstream towards the site access (surplus flows are directed towards the offline Cellular Attenuation 02). This increases the available capacity within the downstream lengths of adoptable sewer, allowing for interception of exceedance flows from the development catchment.
- 4.4 There have been reports of rainwater emerging through the banks of the infiltration basin located in the south-west corner of the site. It is assumed these are incoming flows from the upstream rural catchment. This is entirely possible as this feature has to remain unlined to serve its function as an infiltration basin and therefore is liable to receive emerging groundwater flow through its banks. This should be seen positively as it is reducing hydrostatic pressure which could otherwise emerge elsewhere within the development and directly impact on properties or gardens.

5 Conclusion

- 5.1 The previously constructed exceedance headwall which discharged any residual runoff from the upstream catchment has been relocated to mitigate the risk of rural runoff entering Calaway Gardens.
- 5.2 The proposed headwall has been relocated further east within the public open space, located outside the extent of any existing tree RPA's. This arrangement ensure that any residual runoff from the upstream catchment is dispersed across the public open space, impounded behind the bunding

at the lower edge of site, maximising opportunities for infiltration and evapotranspiration and reducing the risk and impact of any overland flows.