



# SOUTH FARM

Water Eaton, Wiltshire

# DRAINAGE STRATEGY

|             |           |
|-------------|-----------|
| Project No  | 26-274-70 |
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# Control Sheet

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# 1 INTRODUCTION

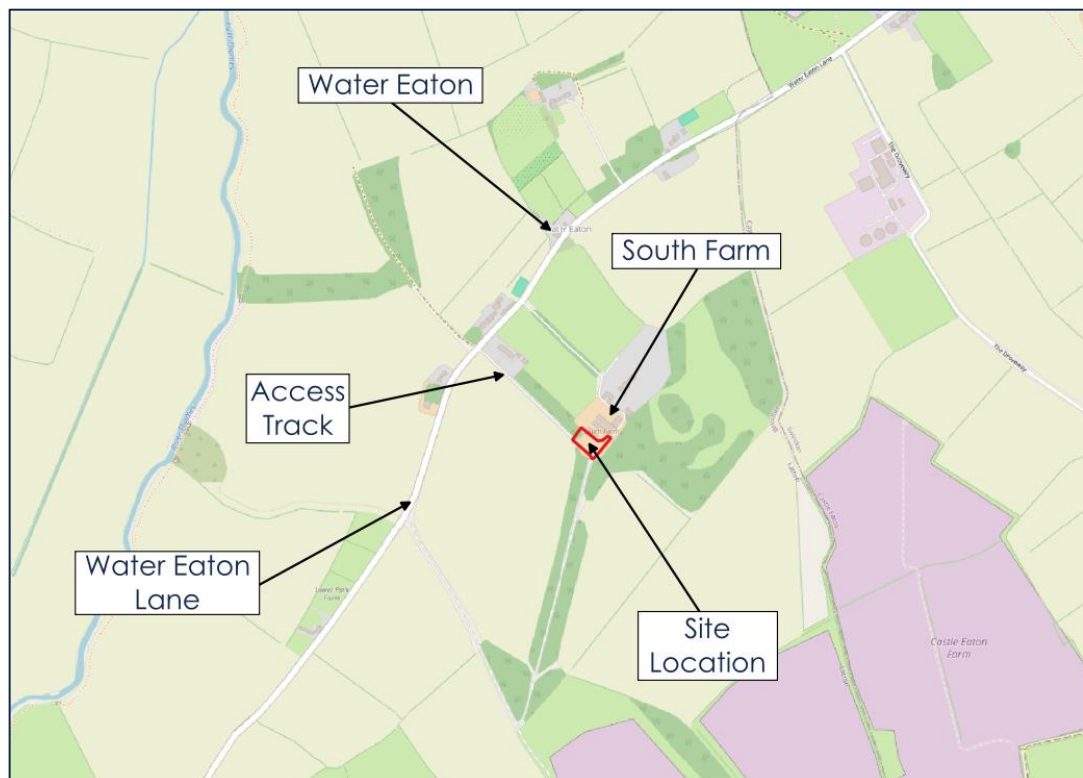
## 1.1 Background and Proposals

- 1.1.1 Calibro Consultants Ltd has been appointed to provide a drainage strategy for a change in land surface at South Farm in Water Eaton, Wiltshire.
- 1.1.2 An area of hardstanding, comprising compacted crushed stone, has been constructed in the southern area of South Farm.
- 1.1.3 An objection has been raised by a neighbouring party, who alleges that this change in land surface has resulted in an increase in surface water runoff along the access track to the farm.
- 1.1.4 In response to this concern, Wiltshire Council, acting in its role as the Lead Local Flood Authority (LLFA), has requested the preparation of a drainage strategy for the hardstanding area. The purpose of this strategy is to demonstrate how surface water runoff from the site will be appropriately managed.

## 1.2 Site Location

- 1.2.1 The site is located off an access track from Water Eaton Lane to the south of Water Eaton hamlet. The nearest postcode is SN6 6JU and approximate coordinates are 413875, 194635. The site location is shown in Figure 1-1.

Figure 1-1 Site Location



## 2 EXISTING SITE CONDITIONS

### 2.1 Topography and Hydrology

- 2.1.1 A topographic survey of the site has been provided and is included in Appendix A.
- 2.1.2 Assessment of the LiDAR data at the site shows that it cannot be used to assess levels, as the levels have changed due to the construction of the hardstanding area. Therefore, only the topographic survey has been used to determine site levels, given that this was conducted post-installation of the works.
- 2.1.3 The topographic survey indicates that the site is essentially flat. Ground levels across the site range from approximately 82.36mAOD along the southwestern boundary to 81.71mAOD in the north of the site, as shown in Figure 2-1.
- 2.1.4 Levels within the central area of the site where the area of hardstanding is located form a plateau at approximately 82.02mAOD, before levels fall away in all directions.
- 2.1.5 The flat and semi-permeable nature of the site means that rain falling on the surface would likely pond in minor depressions before slowly permeating vertically through the surface.
- 2.1.6 Mapping identifies the presence of drainage features to the southeast and northwest of the site. It is assumed these drains are connected by a culvert running beneath the site, which was in situ before the area of hardstanding was constructed.
- 2.1.7 The drains are likely associated with agricultural field drainage and are understood to discharge to Water Eaton Brook, located approximately 430 m to the south.
- 2.1.8 The location of the drains is shown in Figure 2-1.

Figure 2-1 Topography and Hydrology



- 2.1.9 The existing surface water drainage arrangements for the farm are currently unknown, although it is understood the area where the hardstanding has been constructed has no formal positive drainage arrangements.

## 2.2 Geology and Soils

- 2.2.1 Regarding bedrock geology, data held by the British Geological Survey (BGS) shows that the entirety of the site and surrounding areas are underlain by the 'Oxford Clay Formation' bedrock. This is a mudstone bedrock. There are no superficial deposits.
- 2.2.2 BGS mapping shows the bedrock to be 'Rocks with essentially no groundwater'.
- 2.2.3 Soils mapping records the soils under the site as 'Lime-rich loamy and clayey soils with impeded drainage'.
- 2.2.4 In accordance with the BGS Parent Material European Soil Bureau Descriptors, the soils are classified as 'clayey loam to silty loam', which are likely to be deep, at over 1m.

## 3 DRAINAGE STRATEGY

### 3.1 Approach

- 3.1.1 The site comprises an area of hardstanding formed of semi-permeable crushed stone. This hardstanding sits on top of clayey loam to silty loam soils, which are classified as deep.
- 3.1.2 The proposed drainage strategy proposes to use shallow perimeter bunds around three sides of the site. These would form a contained bowl-like landform around the area of hardstanding.
- 3.1.3 The proposed bunds would be relatively low in height (approximately 100mm) and formed from compacted gravel, similar to the existing site surfacing. They would have crest widths of 300mm – 500mm and side slopes of 1 in 3.
- 3.1.4 Their purpose would be to retain surface water runoff within the extent of the hardstanding, allowing temporary shallow ponding and storage during rainfall events, and ensure there is no discharge of surface water runoff from the site.
- 3.1.5 The stored water would then dissipate gradually through infiltration into the hardstanding and the soils beneath, mimicking a greenfield site.
- 3.1.6 This arrangement closely mimics the existing arrangements with the additional benefit of reducing the chance for overland flows to escape the site.
- 3.1.7 The proposed drainage strategy, showing the location of the bunds and a bund section, is presented in Appendix B.

### 3.2 National Standards for SuDS

- 3.2.1 The National Standards for SuDS include a drainage hierarchy, which requires that surface water runoff should be managed as high up the following list as practicably possible:
  - Priority 1 – collect for non-potable use, or then;
  - Priority 2 – into the ground (infiltration), or then;
  - Priority 3 – to a surface water body, or then;
  - Priority 4 – to a surface water sewer, highway drain or another piped surface water drainage system, or then;
  - Priority 5 – to a combined sewer.
- 3.2.2 The relatively small scale of the hardstanding area and the intermittent nature of runoff generation limit the potential volume of water that could be viably captured and reused, achieving Priority 1.

- 3.2.3 As such, the collection and reuse of surface water for non-potable purposes is not considered to be a feasible or proportionate solution for this development.
- 3.2.4 It is therefore proposed that the surface water runoff generated by the hardstanding area will be contained by perimeter bunds, allowing it to be temporarily stored and subsequently infiltrate into the ground. This approach replicates the pre-development drainage behaviour of the site and achieves Priority 2.

### 3.3 National Standard 2: Management of Everyday Rainfall

- 3.3.1 All surface water runoff, including the first 5mm, would be contained in the area of hardstanding by the perimeter bunds before percolating through the semi-permeable hardstanding and into the soils and ground. This is as per the site conditions prior to the construction of the hardstanding.
- 3.3.2 This would ensure no discharge from the site in all storm events, thereby achieving Standard 2.

### 3.4 National Standard 3: Management of Extreme Rainfall and Flooding

- 3.4.1 The proposed bund arrangement creates a shallow, contained storage area across the hardstanding, effectively forming a controlled “bowl” that retains runoff during rainfall events, including those exceeding the design standard (the 1 in 100 year plus climate change event). For example, the depth of rainfall in the design event for durations between 6 to 12 hours is typically less than 100mm. Consequently, the bunding would capture and contain such rainfall, providing a betterment to downstream areas.
- 3.4.2 By preventing the uncontrolled discharge of surface water off-site, the bunds ensure that design flows are routed and stored in a predictable and safe manner, with the chance for exceedance flows from the site greatly reduced.
- 3.4.3 During extreme rainfall, water will temporarily pond within the hardstanding area to a shallow depth, with the bunds providing defined containment and preventing flow towards sensitive receptors, such as the adjacent access track.
- 3.4.4 Furthermore, the bunded system provides a passive and robust exceedance management mechanism, requiring no mechanical components and minimising the risk of failure. Any temporary ponding would dissipate gradually through infiltration and evaporation following the storm event, with negligible residual impacts on surrounding areas.
- 3.4.5 Overall, the use of perimeter bunds allows exceedance flows to be safely contained, managed on-site, and prevented from causing off-site flooding, thereby satisfying the objectives of National Standard 3.

### 3.5 National Standard 4: Water Quality

- 3.5.1 The proposals include perimeter bunds, containing the water on the area of hardstanding.
- 3.5.2 The SuDS Manual (CIRIA C753) states that the design of surface water drainage should consider minimising contaminants in surface water runoff discharged from the site. The level of treatment required depends on the proposed land use, according to the pollution hazard indices. To provide adequate treatment, the SuDS mitigation indices for the development must be equal to, or exceed, the pollution hazard indices.
- 3.5.3 Surface water runoff from 'non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic moments/day' are considered by Table 26.3 of the SuDS Manual to present a Low hazard to water quality (see **Error! Reference source not found.**).
- 3.5.4 Table 26.4 of the SuDS Manual provides SuDS mitigation indices for various SuDS methods discharging to the ground, as summarised in **Error! Reference source not found.** Perimeter bunds are not explicitly defined within the SuDS Manual mitigation indices, but the closest definition would be an infiltration trench due to the crushed gravel used to build the perimeter bunds.
- 3.5.5 It is noted that the mitigation provided for total suspended solids for the access tracks is slightly below the level of contaminant expected. However, the likely release of solids would be significantly lower at the site due to the lower number of vehicle journeys anticipated (considerably < 300 traffic movements/day).

Table 3-1 Water Quality Indices (as per C753 The SuDS Manual)

|                    |                             | Pollution Hazard Level | Total suspended solids | Metals | Hydro-carbons |
|--------------------|-----------------------------|------------------------|------------------------|--------|---------------|
| Land Use           | Non-residential car parking | Low                    | 0.5                    | 0.4    | 0.4           |
| Mitigation Indices | Infiltration trench         | -                      | 0.4                    | 0.4    | 0.4           |

### 3.6 National Standard 5: Amenity

- 3.6.1 Given the nature and scale of the development, this standard is not entirely relevant.

### 3.7 National Standard 6: Biodiversity

- 3.7.1 Given the nature and scale of the development, this standard is not entirely relevant.

## 3.8 National Standard 7: Design for Construction and Maintenance

- 3.8.1 Maintenance of the proposed drainage infrastructure is essential to its operation. Maintenance responsibility will lie with the site owner and will be subject to manufacturer requirements. The proposed maintenance activities are outlined in Table 3-2.

Table 3-2 *Perimeter Bund Maintenance*

| Maintenance Schedule          | Required Action                                                                                         | Typical Frequency              |
|-------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>Regular maintenance</b>    | Visually inspect bunds for erosion, settlement, low points, or breaches in continuity                   | Monthly to quarterly           |
|                               | Remove vegetation, sediment, litter, and obstructions from bunds and hardstanding area                  | Monthly to quarterly           |
|                               | Restore minor settlement or disturbance to maintain designed height (100mm)                             | As required during inspections |
|                               | Confirm rainfall ponding occurs within the hardstanding, and no runoff leaves the site                  | After notable rainfall events  |
| <b>Occasional maintenance</b> | Repair damaged sections due to trafficking, erosion, or wear                                            | Annually or as required        |
|                               | Replace or top-up displaced or compacted gravel material                                                | As required                    |
|                               | Recompact bund material to maintain integrity and effectiveness                                         | As required                    |
|                               | Remove sediment build-up within bunded area if it reduces storage capacity                              | Annually or as required        |
|                               | Remove deep-rooted vegetation that may destabilise bunds                                                | Annually or as required        |
| <b>Monitoring</b>             | Confirm no overtopping, no off-site discharge, and bunds are functioning as designed after a storm      | After significant storm events |
|                               | Maintain log of inspections, defects, and remedial actions                                              | As required                    |
|                               | Inspect and intervene if bund crest drops below design level, off-site flow occurs, or ponding persists | As required                    |

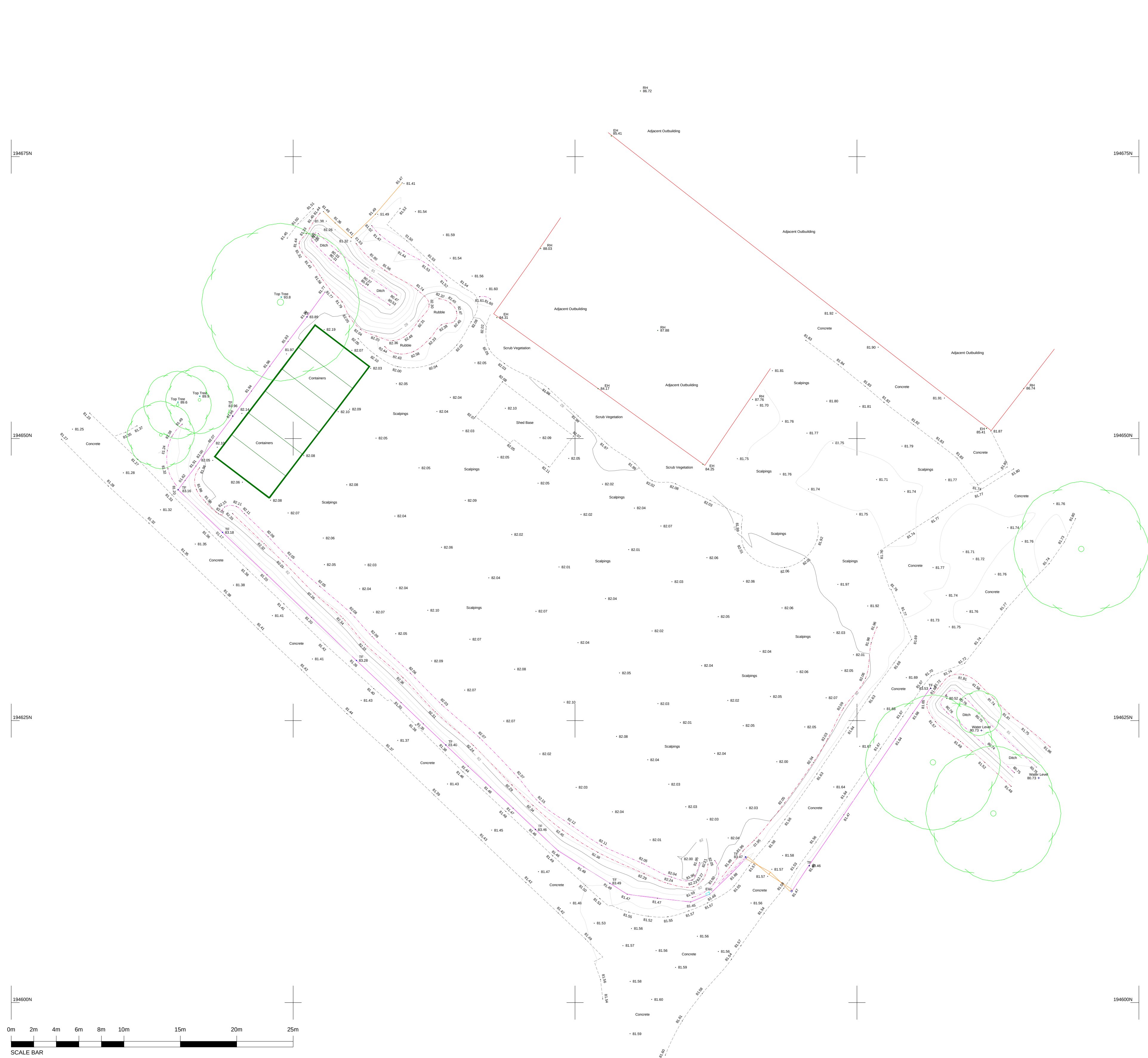
## 4 SUMMARY

- 4.1.1 An area of hardstanding has been constructed at South Farm in Water Eaton, Wiltshire. This has received an objection from a neighbour stating that the change has increased surface water flows along the access track which leads to South Farm.
- 4.1.2 A drainage strategy has therefore been prepared for this area of hardstanding.
- 4.1.3 The area of hardstanding is comprised of semi-permeable crushed stone, which sits on top of clayey loam to silty loam soils that are classified as deep.
- 4.1.4 It is proposed that perimeter bunds will be constructed around the edge of the hardstanding area to contain design rainfall falling on the site. The runoff would then be stored within the hardstanding area before infiltrating into the soils beneath, mimicking a greenfield site.
- 4.1.5 The bunds would be 100mm in height, have crest widths of 300mm to 500mm and a 1 in 3 side slope.
- 4.1.6 As a result of the betterment proposed, the site is considered to be compliant with the National Standards for SuDS.

# APPENDICES

## APPENDIX A

### Topographic Survey



**ANNOTATIONS**

|      |                               |
|------|-------------------------------|
| BS   | Bus Stop Sign                 |
| BTIC | Telecom Cover                 |
| CTIC | Cable Television Cover        |
| DK   | Drop Kerb                     |
| EB   | Electrical Box                |
| EP   | Electricity Transmission Pole |
| ER   | Earthing Rod                  |
| FP   | Footpath                      |
| FWP  | Foul Water Pipe               |
| GY   | Gully                         |
| G(K) | Gully with Kerb Outlet        |
| GSV  | Gas Stop Valve                |
| H    | Hedge                         |
| IC   | Inspection Cover              |
| K    | Kerb                          |
| LP   | Lamp Post                     |
| MH   | Manhole                       |
| Mkr  | Marker Post                   |
| NB   | Notice Board                  |
| RS   | Road Sign                     |
| RWP  | Rain Water Pipe               |
| TP   | Telegraph Pole                |
| WM   | Water Meter                   |
| WSV  | Water Stop Valve              |

**LEVEL POSITIONS**

|       |                            |
|-------|----------------------------|
| CL    | Cover Level                |
| DPC   | Level of damp proof course |
| EH    | Eave Height                |
| FL    | Floor Level                |
| IL    | Invert Level               |
| P Inv | Pipe Invert Level          |
| RH    | Ridge Height               |
| SP    | Spring Point               |
| TF    | Top of Fence               |
| TW    | Top of Wall                |
| US    | Underside                  |
| USB   | Underside Beam             |
| WHL   | Window Head                |
| WSL   | Window Sill                |

Do Not Scale, No Accuracy can be Guaranteed  
Due to Printing and Copy Variations.  
All Critical Dimensions to be Site Checked Prior  
To Design or Fabrication  
Site Measurements should be taken for Confirmation.  
The Survey Grid and Level Datum are related to Ordnance  
Survey National Grid Coordinates.  
Survey Control Station Coordinates are derived by GPS  
Observations.

Survey Scale is 1:200

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**Topographic Survey**

|             |                            |                 |            |
|-------------|----------------------------|-----------------|------------|
| DRAWING NO. | South_Farm_WE_Topo_001.dwg |                 |            |
| SHEET SIZE  | A1-Paperspace              | REVISION SUFFIX |            |
| SCALE       | 1:200 @ A1                 | DATE            | DRAWN      |
|             |                            | March 2026      | March 2026 |
|             |                            | CHECKED         |            |

SCALE 1:200 @ A1

## APPENDIX B

### Proposed Drainage Strategy



SITE BOUNDARY

## PERIMETER BUNDS

## NOTES

1. DO NOT SCALE FROM THIS DRAWING, FOR PLANNING ONLY
2. NOT SUITABLE FOR CONSTRUCTION
3. SURFACE WATER DRAINAGE STRATEGY SHOULD BE REVISED IN CASE OF LAYOUT CHANGES

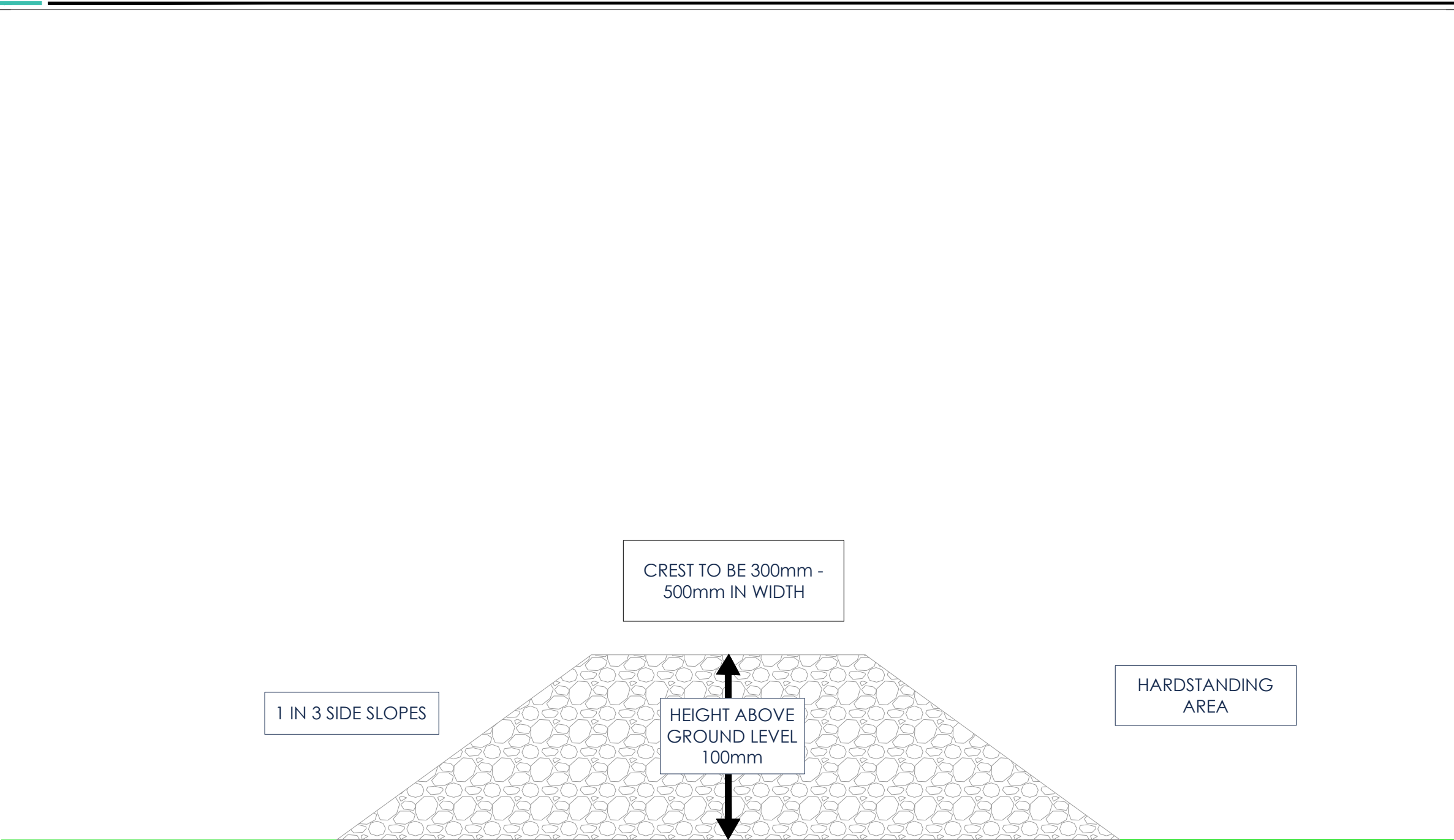


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LEGEND



GROUND LEVEL



PERIMETER BUND

NOTES

- 1. DO NOT SCALE FOR CONSTRUCTION PURPOSES.
- 2. THIS DRAWING IS FOR INFORMATION PURPOSES ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION.
- 3. FINAL LEVELS SUBJECT TO DETAILED DESIGN OR SETTING OUT

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