



## Greenacres Farm, Billingshurst

**degadea**  
water, civils and environment

### Drainage Strategy -Condition 9 i)(b)

Site Address: Greenacres Farm  
West Chilmington Lane  
Billingshurst  
West Sussex  
RH14 9DR

UK Experts in Flood Modelling, Flood Risk  
Assessments, and Surface Water Drainage Strategies

**degadea**  
water, civils and environment

# Document Issue Record

**Project:** Drainage Strategy

**Prepared for:** Manorwood Construction Limited

**Reference:** AEG9433\_RH14\_Greenacres Farm\_07

**Site Location:** Greenacres Farm, West Chiltington Lane, Billingshurst, West Sussex, RH14 9DR

| Issue | Date       | Author         | Check         | Auth.         | Comments                                                                            |
|-------|------------|----------------|---------------|---------------|-------------------------------------------------------------------------------------|
| 1     | 11/11/2025 | Alex Crossette | Daniel Buciak | James Mahoney | First issue                                                                         |
| 2     | 24/06/2025 | Daniel Buciak  | Daniel Buciak | James Mahoney | Updated to latest layout and to address condition 9.1)(b) of APP/Z3825/C/25/3375764 |

## Please Note:

This report has been prepared for the exclusive use of the commissioning party and may not be reproduced without prior written permission from Aegaea Civil Engineering Limited. All work has been carried out within the terms of the brief using all reasonable skill, care, and diligence. No liability is accepted by Aegaea Civil Engineering Limited for the accuracy of data or opinions provided by others in the preparation of this report, or for any use of this report other than for the purpose for which it was produced. Where reference has been made to probability events, or risk probability, it does not ensure that there is no risk or that there is no residual risk from an extreme, unlikely or unforeseen flood event over the lifetime of the development.

# Table of Contents

|                                                                       |           |
|-----------------------------------------------------------------------|-----------|
| <b>1. Introduction.....</b>                                           | <b>1</b>  |
| Site Overview.....                                                    | 1         |
| Development Proposals.....                                            | 2         |
| Ground Conditions .....                                               | 2         |
| <b>2. Surface Water Drainage Strategy.....</b>                        | <b>3</b>  |
| Existing Drainage Arrangements .....                                  | 3         |
| Proposed Drainage Hierarchy .....                                     | 3         |
| Proposed Drainage Strategy .....                                      | 3         |
| <b>3. Future Maintenance Strategy .....</b>                           | <b>5</b>  |
| SuDS Checklist .....                                                  | 5         |
| Surface Water Drainage Systems .....                                  | 6         |
| Permeable Paving .....                                                | 7         |
| Orifice Flow Control.....                                             | 8         |
| <b>4. Pollution Prevention &amp; Water Quality Management .....</b>   | <b>10</b> |
| SuDS Mitigation Indices.....                                          | 10        |
| <b>5. Foul Drainage Strategy .....</b>                                | <b>12</b> |
| Existing Drainage Arrangements .....                                  | 12        |
| Proposed Drainage Strategy .....                                      | 12        |
| <b>Appendix A - Southern Water Sewer Records .....</b>                | <b>13</b> |
| <b>Appendix B - Development Proposals.....</b>                        | <b>14</b> |
| <b>Appendix C - Proposed Drainage Strategy.....</b>                   | <b>15</b> |
| <b>Appendix D - Proposed Surface Water Drainage Calculations.....</b> | <b>16</b> |

# 1. Introduction

- 1.1. Aegaea were commissioned by the Client to prepare a Drainage Strategy to support a planning application associated with the proposed development on land at Greenacres Farm, West Chilmington Lane, Billingshurst, RH14 9DR. This report has been updated following appeal reference APP/Z3825/C/25/3375764 condition 9 i)(b) requesting details of surface water drainage and foul disposal for the proposed development.

## Site Overview

- 1.2. The site of the proposed development is shown in the location plan, Figure 1, below.



Figure 1: Site Location Plan

- 1.3. The site measures approximately 0.988 hectares and is currently an unused grassed field. The site is bound by West Chiltington Lane to the west, open grassed fields to the north with existing access to the north off West Chiltington Lane, existing static caravans to the east and to the south are hedgerows and multiple static caravan pitches.
- 1.4. An existing roadside ditch/ordinary watercourse runs on the easterly side of West Chiltington Lane that flows north to south.
- 1.5. The topography across the site generally falls from a high point in the north-east to a low point in the south-west towards West Chiltington Lane, with steeper gradients along the western boundary between the site and West Chiltington Lane.
- 1.6. Horsham District Council are the Local Planning Authority (LPA) for the site, and West Sussex County Council is the designated Lead Local Flood Authority (LLFA) and Local Highway Authority (LHA).
- 1.7. Southern Water is the Sewerage Undertaker for the area. A copy of Southern Water's sewer records is included in Appendix A.

## Development Proposals

- 1.8. The development proposals comprise the erection/stationing of 2 no. static caravans for residential purposes along with day rooms, car parking and associated landscaping, including a 2m high bund along the southern boundary.
- 1.9. The development proposals are included in Appendix B.

## Ground Conditions

- 1.10. Soilsmap Viewer (LandIS) indicates that the site is located within an area of "Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage".
- 1.11. British Geological Survey (BGS) data indicates that the bedrock underlying the site is "Weald Clay Formation – Mudstone".
- 1.12. Based on the above, infiltration is not considered to be feasible and an alternative strategy in line with the SuDS hierarchy will need to be sought.

## 2. Surface Water Drainage Strategy

### Existing Drainage Arrangements

- 2.1. There is no evidence of an existing drainage system at the site. It is assumed that surface water runoff currently discharges overland to the existing roadside drainage ditch.

### Proposed Drainage Hierarchy

- 2.2. Current guidance indicates that the following surface water disposal options should be considered, listed in order of preference:
- i. **Disposal via on-site infiltration systems:** As discussed above, a discharge to ground has been discounted due to unfeasible ground conditions.
  - ii. **Discharge to a watercourse/surface water body:** An existing roadside ditch/ordinary watercourse runs on the easterly side of West Chilton Lane that flows north to south.
  - iii. **Disposal to surface water sewer:** Southern Water's sewer records indicate that there are no public surface water sewers located within the vicinity of the site.
  - iv. **Disposal to combined sewer:** Southern Water's sewer records indicate that there are no public combined sewers located within the vicinity of the site.
- 2.3. In accordance with the SuDS hierarchy, it is proposed that surface water flows from the development are to discharge at a controlled rate to the existing roadside ditch located along the site's western boundary.

### Proposed Drainage Strategy

- 2.4. In accordance with the Building Regulations hierarchy, NPPF and SuDS best practice, the discharge location for surface water flows has been reviewed for the site and is deemed that the destination criteria for surface water run-off has been met with proposals to discharge to the roadside ditch.
- 2.5. The surface water runoff from the proposed development will be managed using SuDS features comprising tanked permeable gravel driveways, prior to discharging to the existing ditch.

- 2.6. Where a site is below 1ha and the amount of impermeable area of the site is low, it is considered that 2 l/s forms a practical minimum flow rate that balances and mitigates both the increased flood risk and blockage risk to the proposed drainage system. It is therefore proposed to restrict flows to 2 l/s as an appropriate minimum flow for small sites.
- 2.7. The proposed drainage features have been sized to accommodate surface water runoff from all proposed impermeable areas on site, including all modelled 1 in 100-year storm events with an appropriate allowance (45%) made for climate change, plus a 10% urban creep allowance.
- 2.8. The proposed surface water drainage strategy, including layout and details, can be found in Appendix C. Supporting surface water drainage calculations are contained within Appendix D.

## 3. Future Maintenance Strategy

### General Maintenance

- 3.1. The surface water drainage network will be managed throughout the lifetime by the owners of the proposed development.
- 3.2. All drainage, whether piped or SuDS require regular maintenance. The tables below provide an overview of general maintenance tasks and frequency of which they need to be undertaken.
- 3.3. The required maintenance for each component making up the drainage system is scheduled in the tables below, based on CIRIA report C753 – The SuDS manual.

### SuDS Checklist

- 3.4. The following lists the SuDS components and extra features which are found on site:
  - **Manholes and inspection chambers** are provided on pipe bends or junctions and will allow access and cleaning of the system as necessary.
  - **Flow Control – Orifice Plate** (proprietary orifice flow control) are custom made, to control/manage surface water flows from site. The specified orifice diameter limits flows to the agreed discharge rate.
  - **Flow Control - Hydro-Brake** (Vortex Flow Control) is a self-activating vortex flow control with no moving parts and no power requirement. It is used to control the forward flow of water in surface water applications. Hydro-Brake's balance flow rates and attenuation, according to project priorities.
  - **Below ground drainage** pipes convey water and should be free from obstruction at all times to allow free flow.

- **Permeable Paving (tanked)** have a surface that is formed of material that is itself impervious to water. The materials are laid to provide void space through the surface to the sub-base to allow rainwater falling onto the surface or runoff discharged over the surface to infiltrate through the joints or voids between the blocks into the underlying pavement structure. Runoff is temporarily stored within the pavement and discharge slowed. Outlet pipes are constructed through the impermeable membrane to transmit the water to other drainage devices, such as attenuation tanks, ponds, watercourses or sewers.

## Surface Water Drainage Systems

| Maintenance Schedule   | Required Action                                                                                          | Typical frequency                              |
|------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Regular Maintenance    | Inspect for sediment and debris in catchpit manholes and gullies. Clean out as required                  | Twice Annually                                 |
|                        | Cleaning of gutters and any filters on downpipes                                                         | Annually (or as required based on inspections) |
|                        | Trimming any roots that may be causing blockages                                                         | Annually (or as required)                      |
| Occasional Maintenance | Remove sediment and debris in catchpits, gullies, attenuation devices and inside concrete manhole rings. | As required, based on inspections.             |
| Remedial actions       | Reconstruct and/or replace components, if performance deteriorates or failure/blockage occurs.           | As required                                    |
|                        | Replacement of clogged components (flow restriction)                                                     | As required                                    |
| Monitoring             | Inspect silt traps/gullies/catchpits and note rate of sediment accumulation.                             | Monthly in the first year and then annually    |
|                        | Check attenuation devices                                                                                | Annually                                       |

General maintenance for Surface Water Drainage Systems as per CIRIA C753.

## Permeable Paving

| Maintenance Schedule   | Required Action                                                                                                                                                                        | Typical Frequency                                                                                                                                                                                                                                                                                                             |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regular Maintenance    | Regular raking to ensure even spread and smooth surface, may require additional top up.                                                                                                | Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment. |
| Occasional Maintenance | Stabilise and mow contributing and adjacent areas                                                                                                                                      | As required                                                                                                                                                                                                                                                                                                                   |
|                        | Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying.                                                                 | As required – once per year on less frequently used pavements                                                                                                                                                                                                                                                                 |
| Remedial Maintenance   | Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.                                               | As required                                                                                                                                                                                                                                                                                                                   |
|                        | Remediate work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material. | As required                                                                                                                                                                                                                                                                                                                   |
|                        | Rehabilitation of surface and upper substructure by remedial sweeping                                                                                                                  | Every 10 to 15 years or as required (if infiltration performance is                                                                                                                                                                                                                                                           |
| Monitoring             | Initial inspection                                                                                                                                                                     | Monthly for three months after installation                                                                                                                                                                                                                                                                                   |
|                        | Inspect for evidence of poor operation and/or weed growth – if required, take remedial action.                                                                                         | Three-monthly, 48 hr after large storms in the first six months                                                                                                                                                                                                                                                               |
|                        | Inspect silt accumulation rates and establish appropriate brushing frequencies                                                                                                         | Annually                                                                                                                                                                                                                                                                                                                      |
|                        | Monitor inspection chambers                                                                                                                                                            | Annually                                                                                                                                                                                                                                                                                                                      |

## Orifice Flow Control

| Maintenance Schedule | Required Action                                                               | Typical frequency                                  |
|----------------------|-------------------------------------------------------------------------------|----------------------------------------------------|
| Regular Maintenance  | Remove sediment and debris from flow control chambers and upstream manholes   | Monthly (for the first 12 months, then 6 monthly). |
| Remedial Actions     | Replace or clean orifice plate if performance deteriorates or failure occurs. | As necessary.                                      |
| Monitoring           | Check flow control to ensure emptying is occurring.                           | Quarterly and post high intensity storm event.     |

## Hydro-Brake (Vortex Flow Control)

| Maintenance Schedule | Required Action                                                                                                                                                      | Typical frequency                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Regular Maintenance  | Remove sediment and debris from flow control chambers and upstream manholes.<br>Check for signs of damage, wear and tear.<br>Check any visible fixing bolts.         | Monthly (for the first 12 months, then 6 monthly). |
| Remedial Actions     | Replace or clean hydrobrake if performance deteriorates or failure occurs.<br>In the event of the blockage, the blockage/foreign material should be manually removed | As necessary.                                      |
| Monitoring           | Check flow control to ensure emptying is occurring.                                                                                                                  | Quarterly and post high intensity storm event.     |

## Headwalls (Inlets and Outlets)

| Maintenance Schedule   | Required Action                                                                        | Typical frequency                                       |
|------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------|
| Regular Maintenance    | Inspect inlets, outlets for blockages and clear if required                            | Monthly (for the first 12 months, then 6 monthly).      |
|                        | Check for signs of damage, erosion of banks or scour.                                  |                                                         |
|                        | Inspect structural integrity of head wall structure                                    |                                                         |
|                        | Check integrity of metal work and replace when needed.                                 |                                                         |
| Occasional Maintenance | In the event of the blockage, the blockage/foreign material should be manually removed | Annual/bi-annual visual checks are basic recommendation |
|                        | Galvanised Grates and Handrails                                                        |                                                         |
| Remedial Actions       | In the event of damage, erosion of banks or scour, rehabilitate as required.           | As required                                             |
|                        | Repair/rehabilitation of inlets/outlets/overflows                                      | As required                                             |
|                        | Re-level uneven surfaces and reinstate design levels                                   | As required                                             |

- 3.5. Many of the specific maintenance activities for pervious pavements can be undertaken as part of a general site cleaning contract (many car parks or roads as swept to remove litter and for visual reasons to keep them tidy) and therefore, if litter management is already required at site, this should have marginal cost implications.

## 4. Pollution Prevention & Water Quality Management

### SuDS Mitigation Indices

- 4.1. Chapter 26 of the CIRIA C753 The SuDS Manual, provides design advice to meet water quality standards by adopting the SuDS train treatment mechanism and thereby reduce the risk of pollution by evaluating potential pollution hazards at the outset.
- 4.2. The proposed site layout provides the opportunity to introduce SuDS into the scheme to reduce potential contaminant risk further. Runoff from individual property driveways, residential car parks and low traffic roads are generally viewed as low risk (as per Table 26.2 of C753), shown in the tables below.

| Land Use                                                                   | Pollution Hazard Level | Total Suspended Solids (TSS) | Metals | Hydrocarbons |
|----------------------------------------------------------------------------|------------------------|------------------------------|--------|--------------|
| Residential Roofs                                                          | Very Low               | 0.2                          | 0.2    | 0.05         |
| Individual property driveways, residential car parks and low traffic roads | Low                    | 0.5                          | 0.4    | 0.4          |

Pollutant Hazard Indices

|                                             | Mitigation Indices |        |              |      | Indices for Calculation                           |        |              |
|---------------------------------------------|--------------------|--------|--------------|------|---------------------------------------------------|--------|--------------|
|                                             | TSS                | Metals | Hydrocarbons |      | TSS                                               | Metals | Hydrocarbons |
| Permeable Paving                            | 0.7                | 0.6    | 0.7          | 100% | 0.7                                               | 0.6    | 0.7          |
| Total Mitigation Indices score              |                    |        |              |      | 0.7                                               | 0.6    | 0.7          |
| Sufficiency of Pollution Mitigation Indices |                    |        |              |      | Sufficient<br>(No additional mitigation required) |        |              |

SuDS Mitigation Indices

- 4.3. The mitigation indices offered by the proposed SuDS features exceed the hazard indices from roof areas and residential car park and therefore provides adequate mitigation. It is therefore considered that the proposed SuDS features on site are appropriate and acceptable in terms of water quality.

## 5. Foul Drainage Strategy

### Existing Drainage Arrangements

- 5.1. There is no existing foul drainage apparatus at the site.
- 5.2. Southern Water's sewer records, contained in Appendix A, indicate that there are no public foul/combined sewers located within the vicinity of the site.

### Proposed Drainage Strategy

- 5.3. The foul drainage strategy will follow and comply with the 'hierarchy' below, with a connection to a foul/combined sewer being the priority.
- 5.4. As mentioned above, there are no Southern Water's public foul sewers within the vicinity of the site, therefore a connection to a public sewer has been discounted.
- 5.5. Soilsmap Viewer (LandIS) indicates that the site is located within an area of "Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage". British Geological Survey (BGS) data indicates that the bedrock underlying the site is "Weald Clay Formation – Mudstone". Based on the above, a discharge to ground, i.e. drainage field, is not considered to be feasible and an alternative strategy in line with the foul hierarchy will need to be sought.
- 5.6. It is therefore proposed that foul flows arising from the proposed development are directed to a sewage treatment plant, prior to an outfall via gravity into the existing roadside ditch located along the site's western boundary.
- 5.7. Prior to any development, an Environmental Agency Permit and Ordinary Watercourse Consent would need to be obtained.

## Appendix A - Southern Water Sewer Records

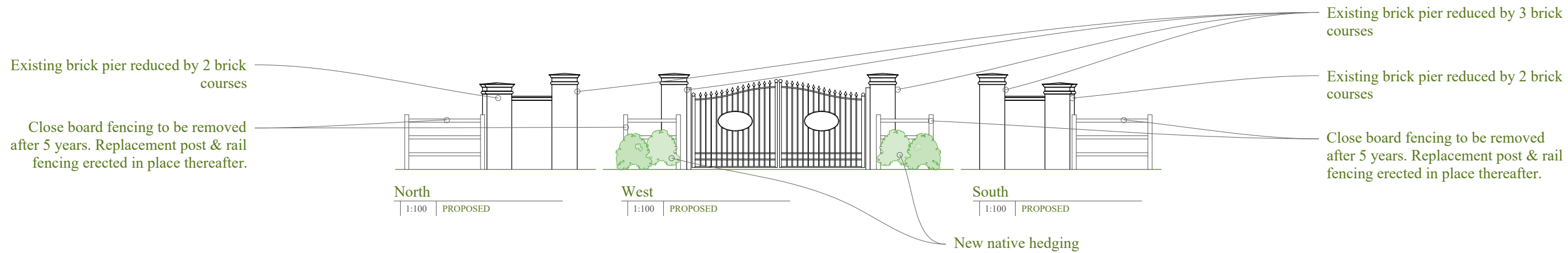
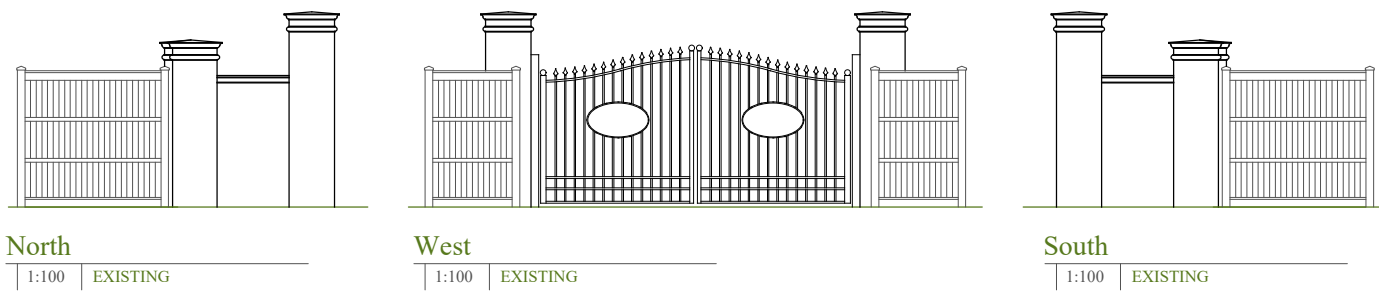




## Appendix B - Development Proposals



Block Plan  
1:500 | PROPOSED



HEDGE PLANTING SCHEDULE

Plants to be between 80-90cm when planted

Main Matrix (Transplants/Quicks)

70% of planting stock  
Hawthorn Crataegus monogyna  
Blackthorn Prunus spinosa

Interplant (Whips/Transplants)

30% of planting stock  
Hazel Corylus avellana  
Holly Ilex aquifolium  
Dog Rose Rosa canina  
Field Maple Acer campestre  
Dogwood Cornus sanguinea  
Spindle Euonymus europaeus  
Wild Privet Ligustrum vulgare  
Common Beach Fagus sylvatica  
Common Hornbeam Carpinus betulus  
Guelder rose Viburnum opulus

Hedging should be planted in two staggered rows at a density of not less than 5 per metre, with approximately 450mm between plants in the same row, and 300-400mm between rows.

The interplant whips/transplants should be planted within this pattern in groups of 2/3. Planting will be protected from grazing animals where applicable with a 1.5m high galvanised equine stock fence (or similar) erected 1m away from new plants.

All hedgerow planting should be carried out in accordance with BS4428:1989, Code of practice for general landscape operations.

Hedgerow shrubs should either be notch planted or trench planted.

Hedge trenches should be dug to a minimum depth of 400mm and width of 600mm, with the plants put into the ground at the same depth at which they had been previously grown in the nursery. All plants need to be well heeled in after planting and watered in during dry weather.

Hedges to be planted between November and March while plants are still dormant. Avoid planting in very cold or wet weather.

20 year Management Plan:

Plant new hedgerows during winter  
Connect them to other natural features to support wildlife spread  
Prune new hedgerows for the first 3-5 years to encourage dense, bushy growth

Ongoing Management:

Manage hedgerows on a cycle to maintain their health and value for wildlife  
Gradually cut hedges higher and wider to prevent them from becoming 'leggy' or 'gappy'  
Rejuvenate hedges through laying or coppicing every 40+ years

Protection Measures:

Establish or maintain green cover buffer strips adjacent to hedgerows  
Protect hedge nesting birds by avoiding cutting or trimming during their nesting period  
Hedgerows will be protected from damage by ensuring these measures are in place

Long-Term Maintenance:

Aim for a balance of old and young hedgerow trees to support diverse wildlife

Trim at the best time for nature, ideally late winter, to allow wildlife to feed on berries and fruits

Environmental Benefits:

Hedgerows enhance biodiversity and provide habitat for a wide range of species  
They offer erosion control, water regulation, and carbon storage to combat climate change  
A new hedgerow can store 600 to 800 kilograms of carbon dioxide per year for up to 20 years

By following these guidelines, hedgerows can be effectively managed and protected to ensure their ecological and environmental benefits are sustained over the long term. Consult with local wildlife trusts or experts for tailored advice and to comply with any specific regulations in your area.

TREE PLANTING SCHEDULE

Quercus robur (Pedunculate Oak)  
Role: Primary Canopy  
Size: 10-12cm girth (Standard), 3.0-3.5m height  
Form: Clear stem 2m  
Root Specification: Rootballed (RB)

Carpinus betulus (Hornbeam)  
Role: Secondary Canopy / Screening  
Size: 8-10cm girth (Light Standard), 2.5-3.0m height  
Root Specification: Bare Root (BR)

Betula pendula (Silver Birch)  
Role: Pioneer / Visual Interest  
Size: 8-10cm girth (Light Standard), 2.5-3.0m height  
Form: Feathered  
Root Specification: Bare Root (BR)

Acer campestre (Field Maple)  
Role: Understorey / Hedgerow  
Size: 60-90cm height  
Form: Transplant / Whip (1+1)  
Root Specification: Bare Root (BR)

Corylus avellana (Hazel)  
Role: Understorey / Shrub Layer  
Size: 60-90cm height  
Form: Transplant / Whip (1+1)  
Root Specification: Bare Root (BR)

Crataegus monogyna (Hawthorn)  
Role: Edge / Wildlife Boundary  
Size: 60-90cm height  
Form: Transplant / Whip (1+1)  
Root Specification: Bare Root (BR)

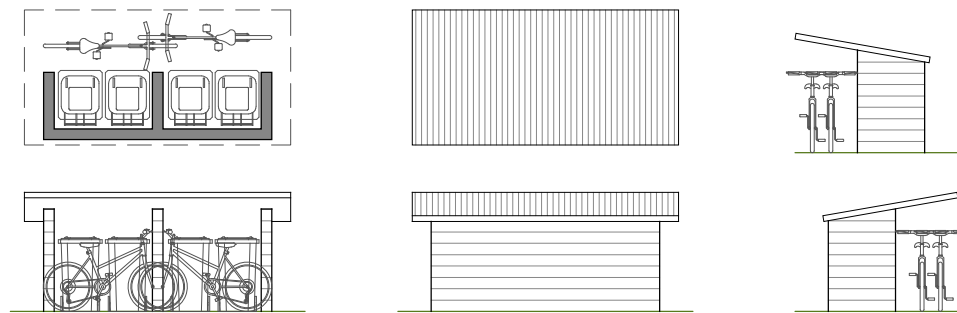
PLANTING AND ESTABLISHMENT NOTES

Timing: Bare root (BR) and rootballed (RB) stock must be planted during the dormant season, strictly between November and March.

Protection: All standard trees require double-staking with crossbar and biodegradable ties. All whips require 60cm clear spiral rabbit guards supported by bamboo canes.

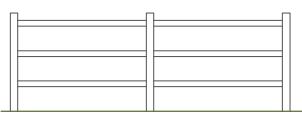
Soil Preparation: Excavated planting pits for standards must have scarified sides to alleviate compaction and prevent waterlogging in heavy local clay soils.

Backfill and Nutrients: Backfill using a 70/30 mix of excavated site topsoil and PAS 100 compost. Incorporate a mycorrhizal fungi inoculant directly at the root zone for all species prior to backfilling to accelerate establishment.



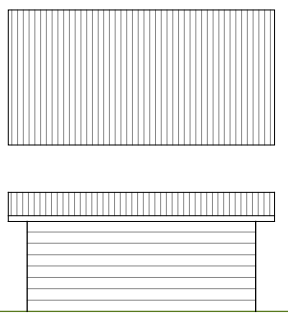
Bike & Bin Store

1:100 | PROPOSED



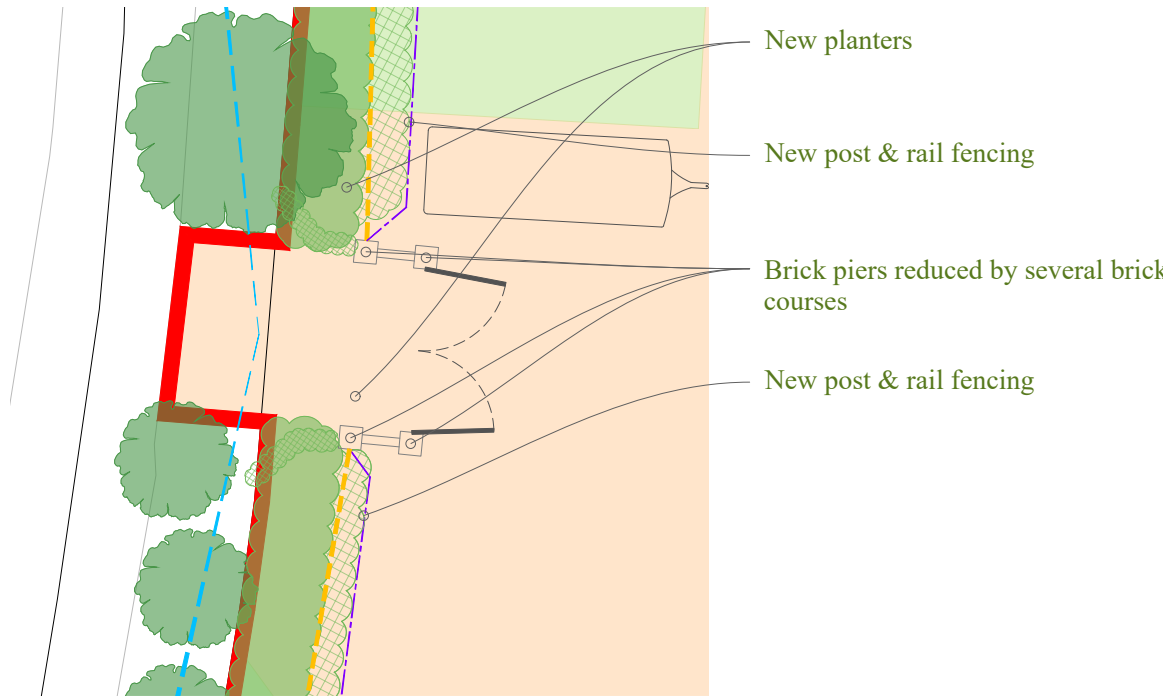
Typical 1.2m high post & rail fence

1:100 | PROPOSED



Typical 1.8m close boarded fence

1:100 | PROPOSED



Block Plan

1:200 | PROPOSED

Copyright:  
This drawing is the copyright of  
Promethean Planning Ltd

Planning/Statutory Use:  
This drawing may be used by the Local  
Planning Authority for planning and  
statutory purposes as permitted by law  
and is issued for planning purposes  
only.

Scale & Dimensions:  
Drawn to the stated scale at the original  
sheet size. If reproduced at any other  
size, the scale may be incorrect.  
Figured dimensions take precedence.  
Not for construction, fabrication or  
setting out. All dimensions and site  
conditions to be checked on site before  
works commence.

CDM 2015:  
This drawing contains only  
information appropriate to its planning  
status. Promethean accepts only duties  
expressly agreed in writing. Where no  
Principal Designer is appointed, client  
duties apply in accordance with CDM  
2015



Suite 114  
26 The Hornet  
Chichester  
West Sussex  
PO19 7BB

tel: 01243 201 102  
email: enquiries@prometheanplanning.co.uk  
web: www.prometheanplanning.co.uk

Address

Greeneries Farm, West  
Chiltington Lane, Billingshurst,  
West Sussex, RH14 9DR

Job No. 2511GR

Submission Planning

Scale @ A2 1:500

Drawing No. 2511GR\_000

Drawn By MD

Checked By BK

Drawn On 18.06.2026

Issued On 18.06.2026

Phase Proposed

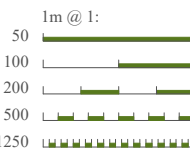
Drawing Conditions

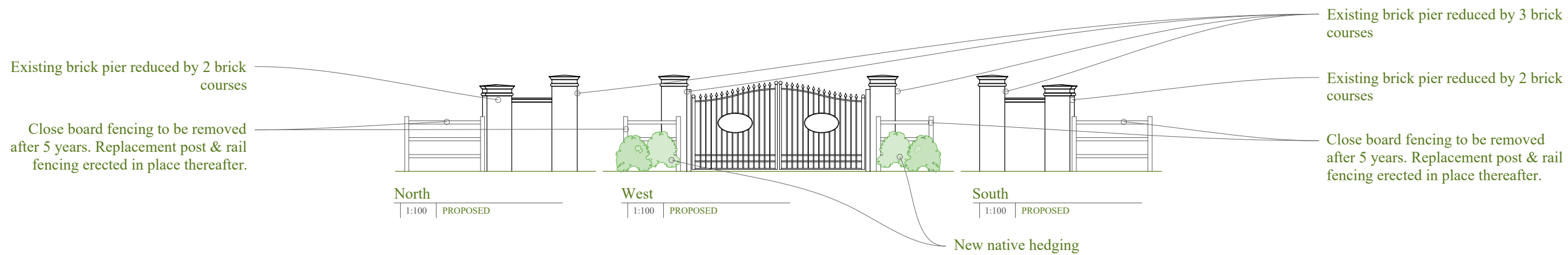
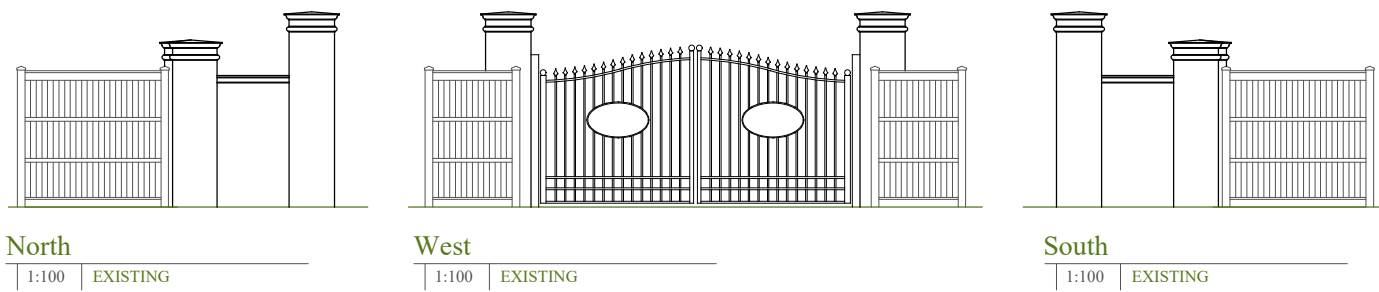
Revision No.

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |



Indicative: 17°





#### HEDGE PLANTING SCHEDULE

Plants to be between 80-90cm when planted

##### Main Matrix (Transplants/Quicks)

70% of planting stock

|            |                    |
|------------|--------------------|
| Hawthorn   | Crataegus monogyna |
| Blackthorn | Prunus spinosa     |

##### Interplant (Whips/Transplants)

30% of planting stock

|                 |                    |
|-----------------|--------------------|
| Hazel           | Corylus avellana   |
| Holly           | Ilex aquifolium    |
| Dog Rose        | Rosa canina        |
| Field Maple     | Acer campestre     |
| Dogwood         | Cornus sanguinea   |
| Spindle         | Euonymus europaeus |
| Wild Privet     | Ligustrum vulgare  |
| Common Beach    | Fagus sylvatica    |
| Common Hornbeam | Carpinus betulus   |
| Guelder rose    | Viburnum opulus    |

Hedging should be planted in two staggered rows at a density of not less than 5 per metre, with approximately 450mm between plants in the same row, and 300-400mm between rows.

The interplant whips/transplants should be planted within this pattern in groups of 2/3. Planting will be protected from grazing animals where applicable with a 1.5m high galvanised equine stock fence (or similar) erected 1m away from new plants.

All hedgerow planting should be carried out in accordance with BS4428:1989, Code of practice for general landscape operations.

Hedgerow shrubs should either be notch planted or trench planted.

Hedge trenches should be dug to a minimum depth of 400mm and width of 600mm, with the plants put into the ground at the same depth at which they had been previously grown in the nursery. All plants need to be well heeled in after planting and watered in during dry weather.

Hedges to be planted between November and March while plants are still dormant. Avoid planting in very cold or wet weather.

##### 20 year Management Plan:

Plant new hedgerows during winter

Connect them to other natural features to support wildlife spread

Prune new hedgerows for the first 3-5 years to encourage dense, bushy growth

##### Ongoing Management:

Manage hedgerows on a cycle to maintain their health and value for wildlife

Gradually cut hedges higher and wider to prevent them from becoming 'leggy' or 'gappy'

Rejuvenate hedges through laying or coppicing every 40+ years

##### Protection Measures:

Establish or maintain green cover buffer strips adjacent to hedgerows

Protect hedge nesting birds by avoiding cutting or trimming during their nesting period

Hedgerows will be protected from damage by ensuring these measures are in place

##### Long-Term Maintenance:

Aim for a balance of old and young hedgerow trees to support diverse wildlife

Trim at the best time for nature, ideally late winter, to allow wildlife to feed on berries and fruits

##### Environmental Benefits:

Hedgerows enhance biodiversity and provide habitat for a wide range of species

They offer erosion control, water regulation, and carbon storage to combat climate change

A new hedgerow can store 600 to 800 kilograms of carbon dioxide per year for up to 20 years

By following these guidelines, hedgerows can be effectively managed and protected to ensure their ecological and environmental benefits are sustained over the long term. Consult with local wildlife trusts or experts for tailored advice and to comply with any specific regulations in your area.

##### TREE PLANTING SCHEDULE

Quercus robur (Pedunculate Oak)

Role: Primary Canopy

Size: 10-12cm girth (Standard), 3.0-3.5m height

Form: Clear stem 2m

Root Specification: Rootballed (RB)

Carpinus betulus (Hornbeam)

Role: Secondary Canopy / Screening

Size: 8-10cm girth (Light Standard), 2.5-3.0m height

Form: Feathered

Root Specification: Bare Root (BR)

Betula pendula (Silver Birch)

Role: Pioneer / Visual Interest

Size: 8-10cm girth (Light Standard), 2.5-3.0m height

Form: Feathered

Root Specification: Bare Root (BR)

Acer campestre (Field Maple)

Role: Understorey / Hedgerow

Size: 60-90cm height

Form: Transplant / Whip (1+1)

Root Specification: Bare Root (BR)

Corylus avellana (Hazel)

Role: Understorey / Shrub Layer

Size: 60-90cm height

Form: Transplant / Whip (1+1)

Root Specification: Bare Root (BR)

Crataegus monogyna (Hawthorn)

Role: Edge / Wildlife Boundary

Size: 60-90cm height

Form: Transplant / Whip (1+1)

Root Specification: Bare Root (BR)

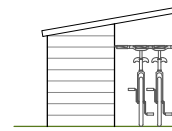
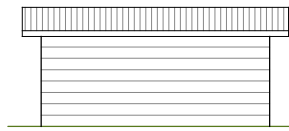
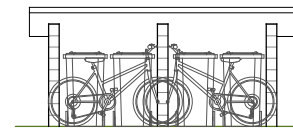
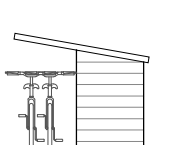
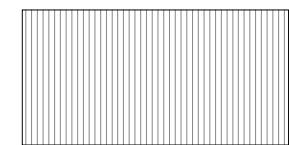
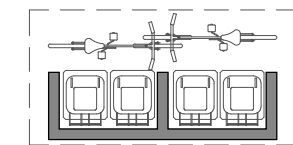
##### PLANTING AND ESTABLISHMENT NOTES

Timing: Bare root (BR) and rootballed (RB) stock must be planted during the dormant season, strictly between November and March.

Protection: All standard trees require double-staking with crossbar and biodegradable ties. All whips require 60cm clear spiral rabbit guards supported by bamboo canes.

Soil Preparation: Excavated planting pits for standards must have scarified sides to alleviate compaction and prevent waterlogging in heavy local clay soils.

Backfill and Nutrients: Backfill using a 70/30 mix of excavated site topsoil and PAS 100 compost. Incorporate a mycorrhizal fungi inoculant directly at the root zone for all species prior to backfilling to accelerate establishment.



##### Bike & Bin Store

1:100 PROPOSED

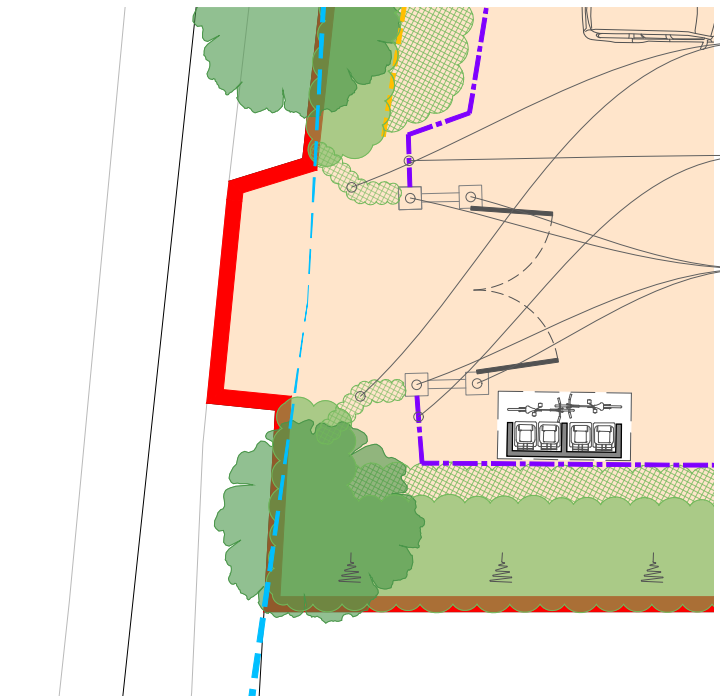


##### Typical 1.2m high post & rail fence

1:100 PROPOSED

##### Typical 1.8m close boarded fence

1:100 PROPOSED



##### Block Plan

1:200 PROPOSED

Copyright:  
This drawing is the copyright of  
Promethean Planning Ltd

Planning/Statutory Use:  
This drawing may be used by the Local  
Planning Authority for planning and  
statutory purposes as permitted by law  
and is issued for planning purposes only.

Scale & Dimensions:  
Drawn to the stated scale at the original  
sheet size. If reproduced at any other  
size, the scale may be incorrect.  
Figured dimensions take precedence.  
Not for construction, fabrication or  
setting out. All dimensions and site  
conditions to be checked on site before  
works commence.

CDM 2015:  
This drawing contains only  
information appropriate to its planning  
status. Promethean accepts only duties  
expressly agreed in writing. Where no  
Principal Designer is appointed, client  
duties apply in accordance with CDM  
2015



Suite 114  
26 The Hornet  
Chichester  
West Sussex  
PO19 7BB

tel: 01243 201 102  
email: enquiries@prometheanplanning.co.uk  
web: www.prometheanplanning.co.uk

##### Address

Greenacres Farm, West  
Chiltington Lane, Billingshurst,  
West Sussex, RH14 9DR

Job No. 2511GR

Submission Planning

Scale @ A2 1:500

Drawing No. 2511GR\_000

Drawn By MD

Checked By BK

Drawn On 18.06.2026

Issued On 18.06.2026

Phase Proposed

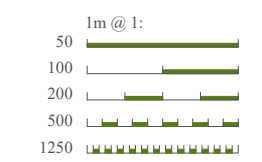
Drawing Conditions

Revision No.

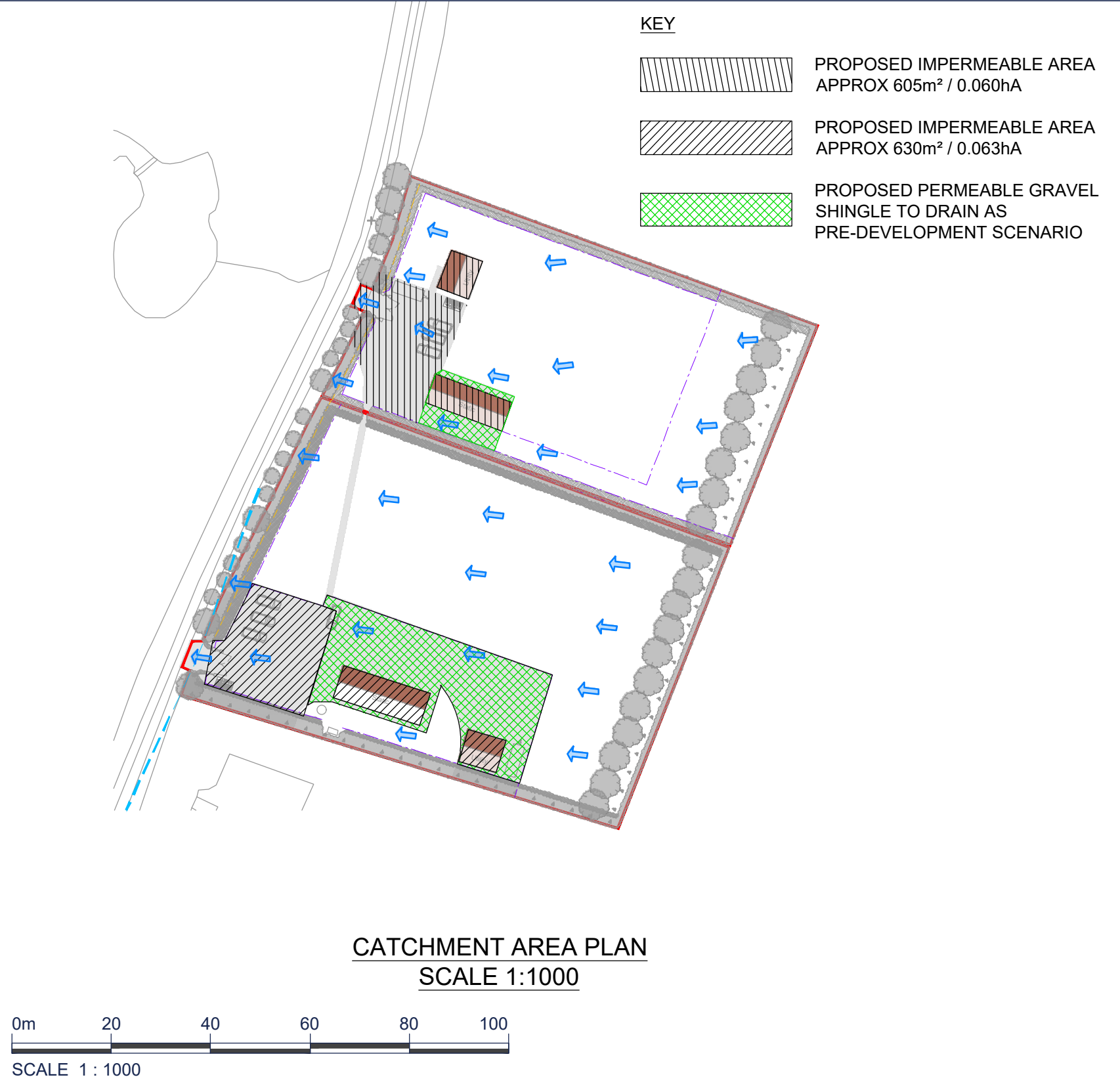
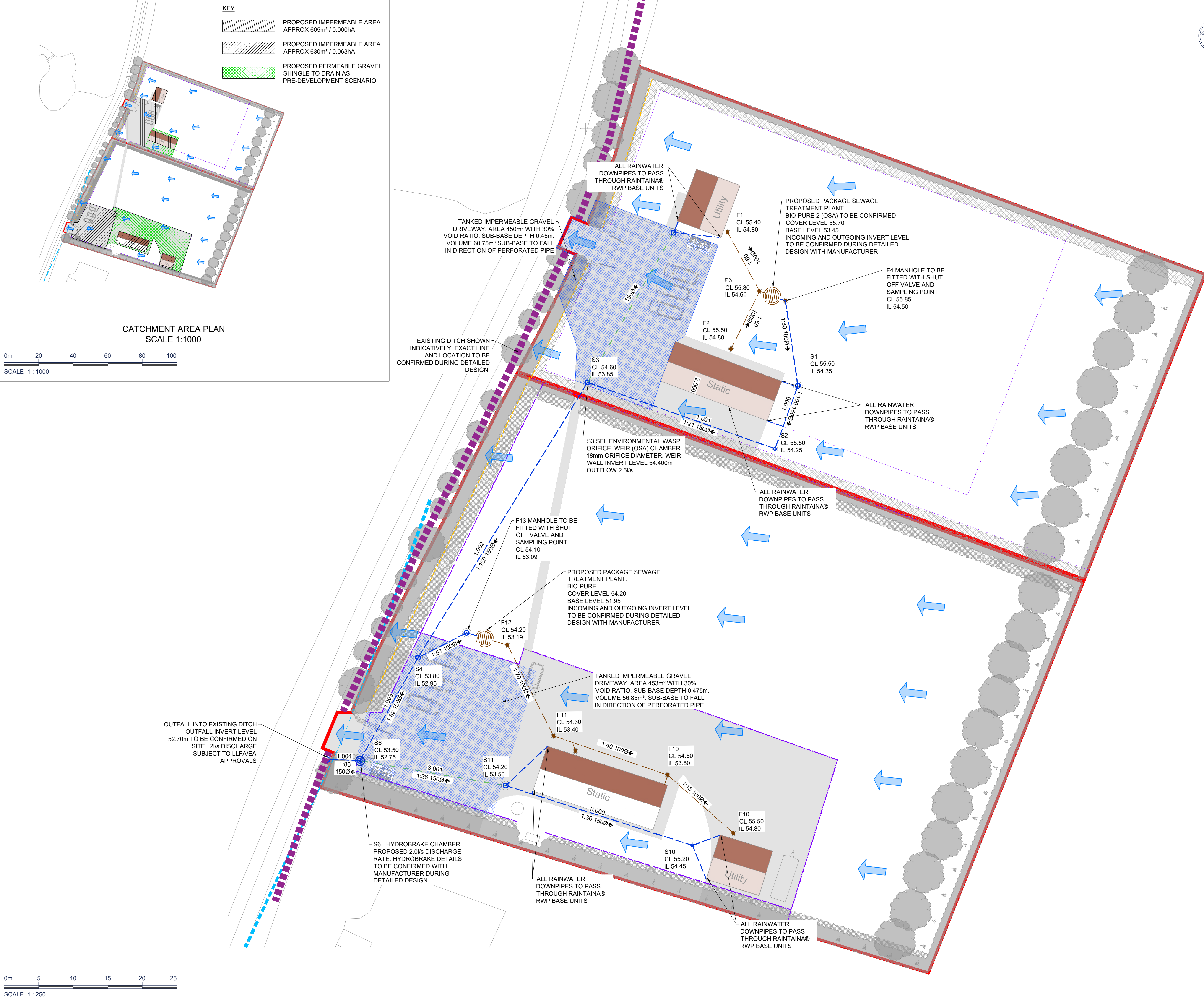
|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |



Indicative: 17°

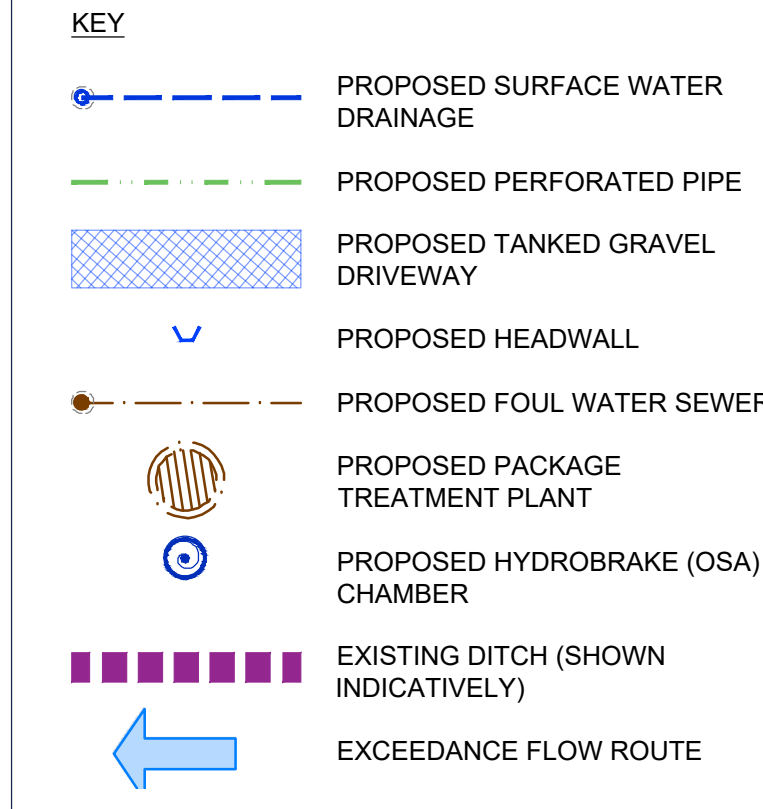


## Appendix C - Proposed Drainage Strategy



DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY. THE CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON SITE. ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ENGINEER FOR CLARIFICATION BEFORE PROCEEDING. THIS DRAWING IS COPYRIGHT AND OWNED BY AEGAEA.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION REFER TO THE RELEVANT CONSTRUCTION (DESIGN AND MANAGEMENT) DOCUMENTATION WHERE APPLICABLE. IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT.



- GENERAL NOTES**
- THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN AND APPROVALS FROM RELEVANT STATUTORY BODIES.
  - POSITIONS OF EXISTING SERVICES/STATUTORY UNDERTAKERS APPARATUS ADJACENT TO OR CROSSING PROPOSED EXCAVATIONS ARE TO BE CONFIRMED PRIOR TO START ON SITE.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AND CHECKED AGAINST ALL ENGINEERING DETAILS, SPECIFICATIONS, GEOTECHNICAL AND OTHER RELEVANT DOCUMENTATION PROVIDED.
  - THIS DRAWING IS SCHEMATIC FOR CLARITY ONLY. POSITIONS OF PIPE RUNS AND MANHOLES MAY VARY ON SITE DUE TO SITE CONDITIONS.
  - WHERE EXISTING OR PROPOSED TREES ARE ADJACENT TO ACCESS ROADS OR DRAINAGE, ROOT BARRIERS (TYPE TO BE APPROVED) ARE REQUIRED TO PREVENT STRUCTURAL DAMAGE.
  - ANY ANOMALY OR CONTRADICTIONS BETWEEN ANY OF THE ABOVE IS TO BE REPORTED IMMEDIATELY.
  - THE DESIGN IS TO COMPLY IN ALL ASPECTS WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND BUILDING LEGISLATION ETC.
  - ALL PIPE SIZES, CHAMBER DEPTHS, SIZE & QUANTITY SUBJECT TO REVIEW AND DETAILED DESIGN. ALL ADOPTED PIPE WORK ROUTING AND ANY EASEMENTS SUBJECT TO FULL DESIGN REVIEW AND APPROVAL BY THE RELEVANT BODIES.
  - DRAINAGE DESIGN SUBJECT TO DETAILED LEVELS AND EXTERNAL WORKS DESIGN.
  - SUBJECT TO DETAILED DESIGN AND APPROVAL.

THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND NOT FOR CONSTRUCTION SUBJECT TO LOCAL PLANNING AUTHORITY, LEAD LOCAL FLOOD AUTHORITY AND ENVIRONMENT AGENCY APPROVALS.

LEVELS INFORMATION IS BASED ON LIDAR DATA AND SHOWN INDICATIVELY ONLY. LEVELS TO BE CONFIRMED WITH TOPOGRAPHICAL SURVEY.

|     |          |                                                 |    |
|-----|----------|-------------------------------------------------|----|
| A02 | 24.06.26 | UPDATED TO LATEST LAYOUT/DISCHARGE OF CONDITION | AC |
| A01 | 11.11.25 | FIRST ISSUE                                     | AC |

| Rev | Date | Description | By |
|-----|------|-------------|----|
|-----|------|-------------|----|

Client  
**MANORWOOD CONSTRUCTION LIMITED**

Project  
**GREENACRES FARM, BILLINGSHURST**

Title  
**PROPOSED DRAINAGE STRATEGY**

|             |         |             |          |            |
|-------------|---------|-------------|----------|------------|
| Project No. |         | Drawing No. |          | Revision   |
| AEG9433     |         | CIV-001     |          | A02        |
| Drawn       | Checked | Approved    | Date     | Scale @ A1 |
| AC          | DB      | JM          | NOV 2025 | 1:250      |

Drawing Status  
**PLANNING-CONDITION**





## Appendix D - Proposed Surface Water Drainage Calculations

**Design Settings**

|                       |        |                                      |               |                                    |       |
|-----------------------|--------|--------------------------------------|---------------|------------------------------------|-------|
| Rainfall Methodology  | FEH-22 | Maximum Time of Concentration (mins) | 30.00         | Preferred Cover Depth (m)          | 1.200 |
| Return Period (years) | 2      | Maximum Rainfall (mm/hr)             | 50.0          | Include Intermediate Ground        | ✓     |
| Additional Flow (%)   | 0      | Minimum Velocity (m/s)               | 1.00          | Enforce best practice design rules | x     |
| CV                    | 1.000  | Connection Type                      | Level Soffits |                                    |       |
| Time of Entry (mins)  | 5.00   | Minimum Backdrop Height (m)          | 0.200         |                                    |       |

**Nodes**

| Name    | Area<br>(ha) | T of E<br>(mins) | Cover<br>Level<br>(m) | Node<br>Type | Diameter<br>(mm) | Easting<br>(m) | Northing<br>(m) | Depth<br>(m) | Invert<br>Level<br>(m) |
|---------|--------------|------------------|-----------------------|--------------|------------------|----------------|-----------------|--------------|------------------------|
| S1      |              | 5.00             | 55.850                | Manhole      | 600              | 511496.638     | 126582.366      | 1.500        | 54.350                 |
| S2      | 0.010        | 5.00             | 54.950                | Manhole      | 600              | 511493.319     | 126573.249      | 0.700        | 54.250                 |
| S3      | 0.050        | 5.00             | 54.600                | Manhole      | 600              | 511462.438     | 126583.825      | 0.750        | 53.850                 |
| S4      |              |                  | 53.800                | Manhole      | 600              | 511440.801     | 126542.652      | 0.850        | 52.950                 |
| S5      | 0.045        | 5.00             | 53.500                | Manhole      | 1200             | 511433.124     | 126528.046      | 0.750        | 52.750                 |
| S10     | 0.005        | 5.00             | 55.200                | Manhole      | 600              | 511481.355     | 126515.766      | 0.750        | 54.450                 |
| S11     | 0.012        | 5.00             | 54.200                | Manhole      | 600              | 511454.281     | 126524.529      | 0.700        | 53.500                 |
| OUTFALL |              |                  | 53.500                | Junction     |                  | 511428.813     | 126528.227      | 0.800        | 52.700                 |

Links

| Name  | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) | Link Type | T of C (mins) | Rain (mm/hr) |
|-------|---------|---------|------------|-------------|-----------|-----------|----------|-------------|----------|-----------|---------------|--------------|
| 1.000 | S1      | S2      | 9.702      | 0.600       | 54.350    | 54.250    | 0.100    | 97.0        | 150      | Circular  | 5.16          | 50.0         |
| 1.001 | S2      | S3      | 32.642     | 0.600       | 54.250    | 53.850    | 0.400    | 81.6        | 150      | Circular  | 5.65          | 50.0         |
| 1.002 | S3      | S4      | 46.512     | 0.600       | 53.850    | 52.950    | 0.900    | 51.7        | 150      | Circular  | 6.20          | 50.0         |
| 1.003 | S4      | S5      | 16.501     | 0.600       | 52.950    | 52.750    | 0.200    | 82.5        | 150      | Circular  | 6.45          | 50.0         |
| 1.004 | S5      | OUTFALL | 4.315      | 0.600       | 52.750    | 52.700    | 0.050    | 86.3        | 150      | Circular  | 6.51          | 50.0         |
| 3.000 | S10     | S11     | 28.457     | 0.600       | 54.450    | 53.500    | 0.950    | 30.0        | 150      | Circular  | 5.26          | 50.0         |
| 3.001 | S11     | S5      | 21.447     | 0.600       | 53.500    | 52.750    | 0.750    | 28.6        | 150      | Circular  | 5.45          | 50.0         |

| Name  | US Node | DS Node | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Add Inflow (l/s) | Pro Depth (mm) | Pro Velocity (m/s) |
|-------|---------|---------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|----------------|--------------------|
| 1.000 | S1      | S2      | 1.020     | 18.0      | 0.0        | 1.350        | 0.550        | 0.000       | 0.0                | 0              | 0.000              |
| 1.001 | S2      | S3      | 1.113     | 19.7      | 1.8        | 0.550        | 0.600        | 0.010       | 0.0                | 31             | 0.696              |
| 1.002 | S3      | S4      | 1.402     | 24.8      | 10.8       | 0.600        | 0.700        | 0.060       | 0.0                | 69             | 1.357              |
| 1.003 | S4      | S5      | 1.107     | 19.6      | 10.8       | 0.700        | 0.600        | 0.060       | 0.0                | 80             | 1.136              |
| 1.004 | S5      | OUTFALL | 1.082     | 19.1      | 22.0       | 0.600        | 0.650        | 0.122       | 0.0                | 150            | 1.103              |
| 3.000 | S10     | S11     | 1.846     | 32.6      | 0.9        | 0.600        | 0.550        | 0.005       | 0.0                | 17             | 0.808              |
| 3.001 | S11     | S5      | 1.890     | 33.4      | 3.1        | 0.550        | 0.600        | 0.017       | 0.0                | 31             | 1.185              |

**Pipeline Schedule**

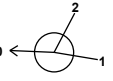
| Link  | Length<br>(m) | Slope<br>(1:X) | Dia<br>(mm) | Link<br>Type | US CL<br>(m) | US IL<br>(m) | US Depth<br>(m) | DS CL<br>(m) | DS IL<br>(m) | DS Depth<br>(m) |
|-------|---------------|----------------|-------------|--------------|--------------|--------------|-----------------|--------------|--------------|-----------------|
| 1.000 | 9.702         | 97.0           | 150         | Circular     | 55.850       | 54.350       | 1.350           | 54.950       | 54.250       | 0.550           |
| 1.001 | 32.642        | 81.6           | 150         | Circular     | 54.950       | 54.250       | 0.550           | 54.600       | 53.850       | 0.600           |
| 1.002 | 46.512        | 51.7           | 150         | Circular     | 54.600       | 53.850       | 0.600           | 53.800       | 52.950       | 0.700           |
| 1.003 | 16.501        | 82.5           | 150         | Circular     | 53.800       | 52.950       | 0.700           | 53.500       | 52.750       | 0.600           |
| 1.004 | 4.315         | 86.3           | 150         | Circular     | 53.500       | 52.750       | 0.600           | 53.500       | 52.700       | 0.650           |
| 3.000 | 28.457        | 30.0           | 150         | Circular     | 55.200       | 54.450       | 0.600           | 54.200       | 53.500       | 0.550           |
| 3.001 | 21.447        | 28.6           | 150         | Circular     | 54.200       | 53.500       | 0.550           | 53.500       | 52.750       | 0.600           |

| Link  | US<br>Node | Dia<br>(mm) | Node<br>Type | MH<br>Type | DS<br>Node | Dia<br>(mm) | Node<br>Type | MH<br>Type |
|-------|------------|-------------|--------------|------------|------------|-------------|--------------|------------|
| 1.000 | S1         | 600         | Manhole      | Adoptable  | S2         | 600         | Manhole      | Adoptable  |
| 1.001 | S2         | 600         | Manhole      | Adoptable  | S3         | 600         | Manhole      | Adoptable  |
| 1.002 | S3         | 600         | Manhole      | Adoptable  | S4         | 600         | Manhole      | Adoptable  |
| 1.003 | S4         | 600         | Manhole      | Adoptable  | S5         | 1200        | Manhole      | Adoptable  |
| 1.004 | S5         | 1200        | Manhole      | Adoptable  | OUTFALL    |             | Junction     |            |
| 3.000 | S10        | 600         | Manhole      | Adoptable  | S11        | 600         | Manhole      | Adoptable  |
| 3.001 | S11        | 600         | Manhole      | Adoptable  | S5         | 1200        | Manhole      | Adoptable  |

**Manhole Schedule**

| Node | Easting<br>(m) | Northing<br>(m) | CL<br>(m) | Depth<br>(m) | Dia<br>(mm) | Connections                                                                           | Link | IL<br>(m) | Dia<br>(mm) |     |
|------|----------------|-----------------|-----------|--------------|-------------|---------------------------------------------------------------------------------------|------|-----------|-------------|-----|
| S1   | 511496.638     | 126582.366      | 55.850    | 1.500        | 600         |  | 0    | 1.000     | 54.350      | 150 |
| S2   | 511493.319     | 126573.249      | 54.950    | 0.700        | 600         |  | 1    | 1.000     | 54.250      | 150 |
|      |                |                 |           |              |             |                                                                                       | 0    | 1.001     | 54.250      | 150 |

**Manhole Schedule**

| Node    | Easting<br>(m) | Northing<br>(m) | CL<br>(m) | Depth<br>(m) | Dia<br>(mm) | Connections                                                                                     | Link           | IL<br>(m)        | Dia<br>(mm) |
|---------|----------------|-----------------|-----------|--------------|-------------|-------------------------------------------------------------------------------------------------|----------------|------------------|-------------|
| S3      | 511462.438     | 126583.825      | 54.600    | 0.750        | 600         |  1<br>0      | 1.001          | 53.850           | 150         |
| S4      | 511440.801     | 126542.652      | 53.800    | 0.850        | 600         |  1<br>0      | 1.002          | 52.950           | 150         |
| S5      | 511433.124     | 126528.046      | 53.500    | 0.750        | 1200        |  2<br>1<br>0 | 3.001<br>1.003 | 52.750<br>52.750 | 150<br>150  |
| S10     | 511481.355     | 126515.766      | 55.200    | 0.750        | 600         |  0<br>1      | 3.000          | 54.450           | 150         |
| S11     | 511454.281     | 126524.529      | 54.200    | 0.700        | 600         |  0<br>1<br>1 | 3.000          | 53.500           | 150         |
| OUTFALL | 511428.813     | 126528.227      | 53.500    | 0.800        |             |  1<br>0    | 1.004          | 52.700           | 150         |

**Simulation Settings**

|                      |          |                   |        |                            |     |                         |   |
|----------------------|----------|-------------------|--------|----------------------------|-----|-------------------------|---|
| Rainfall Methodology | FEH-22   | Winter CV         | 1.000  | Drain Down Time (mins)     | 240 | Check Discharge Rate(s) | x |
| Rainfall Events      | Singular | Analysis Speed    | Normal | Additional Storage (m³/ha) | 0.0 | Check Discharge Volume  | x |
| Summer CV            | 1.000    | Skip Steady State | x      | Starting Level (m)         |     |                         |   |

**Storm Durations**

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

| Return Period<br>(years) | Climate Change<br>(CC %) | Additional Area<br>(A %) | Additional Flow<br>(Q %) | Return Period<br>(years) | Climate Change<br>(CC %) | Additional Area<br>(A %) | Additional Flow<br>(Q %) |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2                        | 0                        | 10                       | 0                        | 100                      | 45                       | 10                       | 0                        |
| 30                       | 0                        | 10                       | 0                        |                          |                          |                          |                          |

#### Node S3 Online Orifice Control

|                          |   |                  |        |                   |       |                       |       |
|--------------------------|---|------------------|--------|-------------------|-------|-----------------------|-------|
| Flap Valve               | x | Invert Level (m) | 53.850 | Design Flow (l/s) | 2.0   | Discharge Coefficient | 0.600 |
| Replaces Downstream Link | x | Design Depth (m) | 0.750  | Diameter (m)      | 0.018 |                       |       |

#### Node S3 Online Weir Control

|                          |   |                  |        |                       |       |
|--------------------------|---|------------------|--------|-----------------------|-------|
| Flap Valve               | x | Invert Level (m) | 54.400 | Discharge Coefficient | 0.590 |
| Replaces Downstream Link | x | Width (m)        | 0.600  |                       |       |

#### Node S5 Online Hydro-Brake® Control

|                          |        |                         |                                |
|--------------------------|--------|-------------------------|--------------------------------|
| Flap Valve               | x      | Objective               | (HE) Minimise upstream storage |
| Replaces Downstream Link | x      | Sump Available          | ✓                              |
| Invert Level (m)         | 52.750 | Product Number          | CTL-SHE-0072-2000-0675-2000    |
| Design Depth (m)         | 0.675  | Min Outlet Diameter (m) | 0.100                          |
| Design Flow (l/s)        | 2.0    | Min Node Diameter (mm)  | 1200                           |

#### Node S3 Carpark Storage Structure

|                             |         |                           |        |             |        |               |       |
|-----------------------------|---------|---------------------------|--------|-------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Porosity                  | 0.30   | Width (m)   | 16.100 | Depth (m)     | 0.450 |
| Side Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 53.850 | Length (m)  | 28.000 | Inf Depth (m) |       |
| Safety Factor               | 2.0     | Time to half empty (mins) |        | Slope (1:X) | 500.0  |               |       |

#### Node S5 Carpark Storage Structure

|                             |         |                           |        |             |        |               |       |
|-----------------------------|---------|---------------------------|--------|-------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Porosity                  | 0.30   | Width (m)   | 18.000 | Depth (m)     | 0.475 |
| Side Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 52.750 | Length (m)  | 25.000 | Inf Depth (m) |       |
| Safety Factor               | 2.0     | Time to half empty (mins) | 232    | Slope (1:X) | 500.0  |               |       |

**Other (defaults)**

|                      |       |                       |       |                          |       |
|----------------------|-------|-----------------------|-------|--------------------------|-------|
| Entry Loss (manhole) | 0.250 | Entry Loss (junction) | 0.000 | Apply Recommended Losses | x     |
| Exit Loss (manhole)  | 0.250 | Exit Loss (junction)  | 0.000 | Flood Risk (m)           | 0.300 |

**Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|--------|
| 15 minute summer  | S1      | 1           | 54.350    | 0.000     | 0.0          | 0.0000        | 0.0000     | OK     |
| 15 minute summer  | S2      | 10          | 54.283    | 0.033     | 2.1          | 0.0093        | 0.0000     | OK     |
| 480 minute winter | S3      | 440         | 53.990    | 0.140     | 1.7          | 15.1692       | 0.0000     | OK     |
| 480 minute winter | S4      | 440         | 52.962    | 0.012     | 0.2          | 0.0033        | 0.0000     | OK     |
| 240 minute summer | S5      | 160         | 52.849    | 0.099     | 4.6          | 10.0504       | 0.0000     | OK     |
| 15 minute summer  | S10     | 10          | 54.469    | 0.019     | 1.1          | 0.0053        | 0.0000     | OK     |
| 15 minute summer  | S11     | 10          | 53.533    | 0.033     | 3.6          | 0.0093        | 0.0000     | OK     |
| 240 minute summer | OUTFALL | 160         | 52.728    | 0.028     | 1.4          | 0.0000        | 0.0000     | OK     |

| Link Event<br>(Upstream Depth) | US Node | Link  | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|-------|---------|---------------|----------------|----------|---------------|--------------------|
| 15 minute summer               | S1      | 1.000 | S2      | 0.0           | 0.000          | 0.000    | 0.0137        |                    |
| 15 minute summer               | S2      | 1.001 | S3      | 2.0           | 0.599          | 0.104    | 0.1416        |                    |
| 480 minute winter              | S3      | 1.002 | S4      | 0.2           | 0.411          | 0.010    | 0.0275        |                    |
| 480 minute winter              | S4      | 1.003 | S5      | 0.2           | 0.111          | 0.012    | 0.0952        |                    |
| 240 minute summer              | S5      | 1.004 | OUTFALL | 1.4           | 0.625          | 0.074    | 0.0097        | 19.4               |
| 15 minute summer               | S10     | 3.000 | S11     | 1.1           | 0.531          | 0.033    | 0.0585        |                    |
| 15 minute summer               | S11     | 3.001 | S5      | 3.5           | 1.062          | 0.105    | 0.0883        |                    |

**Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.86%**

| Node Event                  | US Node | Peak (mins) | Level (m) | Depth (m)     | Inflow (l/s)   | Node Vol (m³) | Flood (m³)    | Status             |
|-----------------------------|---------|-------------|-----------|---------------|----------------|---------------|---------------|--------------------|
| 15 minute summer            | S1      | 1           | 54.350    | 0.000         | 0.0            | 0.0000        | 0.0000        | OK                 |
| 15 minute summer            | S2      | 10          | 54.304    | 0.054         | 5.5            | 0.0152        | 0.0000        | OK                 |
| 720 minute winter           | S3      | 690         | 54.124    | 0.274         | 2.5            | 33.3479       | 0.0000        | SURCHARGED         |
| 720 minute winter           | S4      | 690         | 52.964    | 0.014         | 0.3            | 0.0039        | 0.0000        | OK                 |
| 180 minute summer           | S5      | 136         | 52.943    | 0.193         | 11.4           | 22.8754       | 0.0000        | SURCHARGED         |
| 15 minute summer            | S10     | 10          | 54.479    | 0.029         | 2.7            | 0.0082        | 0.0000        | OK                 |
| 15 minute summer            | S11     | 10          | 53.554    | 0.054         | 9.3            | 0.0152        | 0.0000        | OK                 |
| 180 minute summer           | OUTFALL | 136         | 52.733    | 0.033         | 2.0            | 0.0000        | 0.0000        | OK                 |
| Link Event (Upstream Depth) | US Node | Link        | DS Node   | Outflow (l/s) | Velocity (m/s) | Flow/Cap      | Link Vol (m³) | Discharge Vol (m³) |
| 15 minute summer            | S1      | 1.000       | S2        | 0.0           | 0.000          | 0.000         | 0.0274        |                    |
| 15 minute summer            | S2      | 1.001       | S3        | 5.4           | 0.794          | 0.274         | 0.2960        |                    |
| 720 minute winter           | S3      | 1.002       | S4        | 0.3           | 0.461          | 0.014         | 0.0351        |                    |
| 720 minute winter           | S4      | 1.003       | S5        | 0.3           | 0.125          | 0.018         | 0.1489        |                    |
| 180 minute summer           | S5      | 1.004       | OUTFALL   | 2.0           | 0.690          | 0.104         | 0.0124        | 34.4               |
| 15 minute summer            | S10     | 3.000       | S11       | 2.7           | 0.676          | 0.082         | 0.1149        |                    |
| 15 minute summer            | S11     | 3.001       | S5        | 9.2           | 1.418          | 0.275         | 0.1899        |                    |

**Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.66%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 480 minute winter | S1      | 360         | 54.411    | 0.061     | 0.2          | 0.0172        | 0.0000     | OK         |
| 720 minute winter | S2      | 510         | 54.411    | 0.161     | 0.8          | 0.0455        | 0.0000     | SURCHARGED |
| 600 minute winter | S3      | 435         | 54.411    | 0.561     | 5.3          | 57.3004       | 0.0000     | FLOOD RISK |
| 360 minute winter | S4      | 352         | 53.130    | 0.180     | 1.4          | 0.0510        | 0.0000     | SURCHARGED |
| 360 minute winter | S5      | 352         | 53.130    | 0.380     | 8.5          | 48.3127       | 0.0000     | SURCHARGED |
| 15 minute summer  | S10     | 10          | 54.490    | 0.040     | 5.0          | 0.0112        | 0.0000     | OK         |
| 15 minute summer  | S11     | 10          | 53.576    | 0.076     | 17.0         | 0.0214        | 0.0000     | OK         |
| 180 minute winter | OUTFALL | 392         | 52.733    | 0.033     | 2.0          | 0.0000        | 0.0000     | OK         |

| Link Event (Upstream Depth) | US Node | Link  | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|-----------------------------|---------|-------|---------|---------------|----------------|----------|---------------|--------------------|
| 480 minute winter           | S1      | 1.000 | S2      | -0.2          | -0.041         | -0.013   | 0.1179        |                    |
| 720 minute winter           | S2      | 1.001 | S3      | 0.8           | 0.170          | 0.041    | 0.5747        |                    |
| 600 minute winter           | S3      | 1.002 | S4      | 1.7           | 0.490          | 0.070    | 0.4444        |                    |
| 360 minute winter           | S4      | 1.003 | S5      | 1.4           | 0.079          | 0.071    | 0.2905        |                    |
| 360 minute winter           | S5      | 1.004 | OUTFALL | 2.0           | 0.691          | 0.105    | 0.0125        | 59.0               |
| 15 minute summer            | S10     | 3.000 | S11     | 5.0           | 0.797          | 0.152    | 0.1793        |                    |
| 15 minute summer            | S11     | 3.001 | S5      | 16.9          | 1.604          | 0.506    | 0.2784        |                    |