THE DAIRY, CASTLECAIR ROAD

SURFACE WATER DRAINAGE

| Date | Job No. | Page |
|---|---|---|
| 11/23 | 23/4192 | |
| **Office** | **Engineer** | **Checked** |
| RW | BH | |

SELF BUILD SCHEME

(7 UNITS)

Form 3

**DEVELOPMENT SITE**
**0.49ha.**

**COMMERCIAL PLOT - 0.12ha.**
Includes main entrance and internal access road.

**Proposed Commercial Unit**
2 storey building @ 150 sqm GEA
125.4 sqm GIA

Buried services to support full site and future Self Build plots.
Commercial unit and associated parking
Visitor parking area and Bin and bike provision

**SELF BUILD UNITS**
Suggested 2 storey height with maximum Gross Internal Area

**Plot 1 - 135 sqm / 1460 sqft**

**Plot 2 - 158 sqm / 1700 sqft**
**Plot 3 - 158 sqm / 1700 sqft**
**Plot 4 - 158 sqm / 1700 sqft**
**Plot 5 - 158 sqm / 1700 sqft**

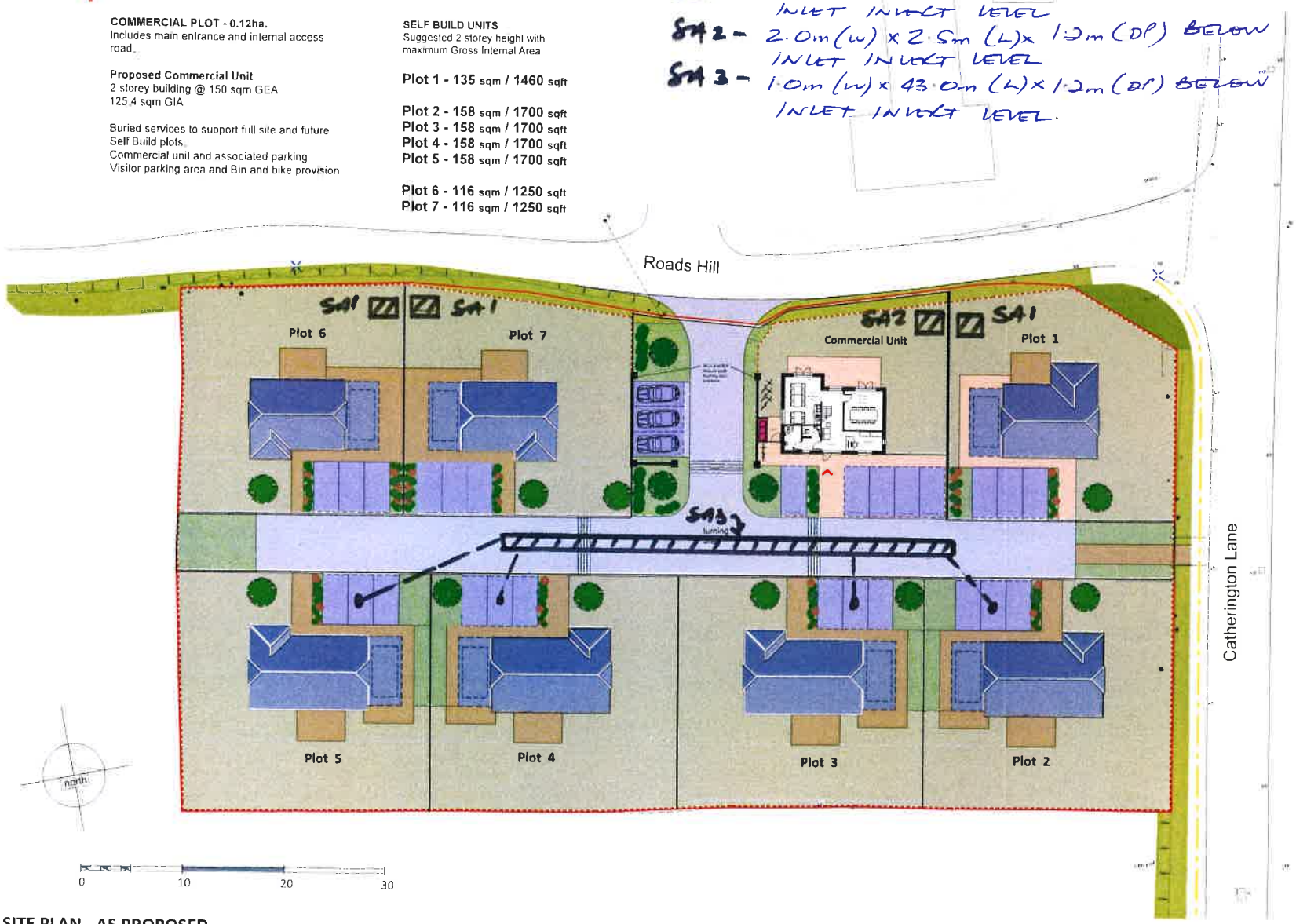
**Plot 6 - 116 sqm / 1250 sqft**
**Plot 7 - 116 sqm / 1250 sqft**

**Key**

SA1 - 2.0m (w) x 2.5m (L) x 1.2m (DP) BELOW INLET INVERT LEVEL

SA2 - 2.0m (w) x 2.5m (L) x 1.2m (DP) BELOW INLET INVERT LEVEL

SA3 - 1.0m (w) x 43.0m (L) x 1.2m (DP) BELOW INLET INVERT LEVEL.




**SITE PLAN - AS PROPOSED**

1:200

| | | |
|---|---|---|
| E | PLANNING ISSUE | 07.11.23 |
| D | Final Issue | 07.10.23 |
| C | tender added | 11.09.23 |
| B | minor amendments | 08.09.23 |
| A | minor amendments | 05.06.23 |

PETER ERNEST HOMES LTD

SELF BUILD DEVELOPMENT
THE DAIRY,
CATHERINGTON,
HANTS

PROPOSED HYBRID SITE PLAN

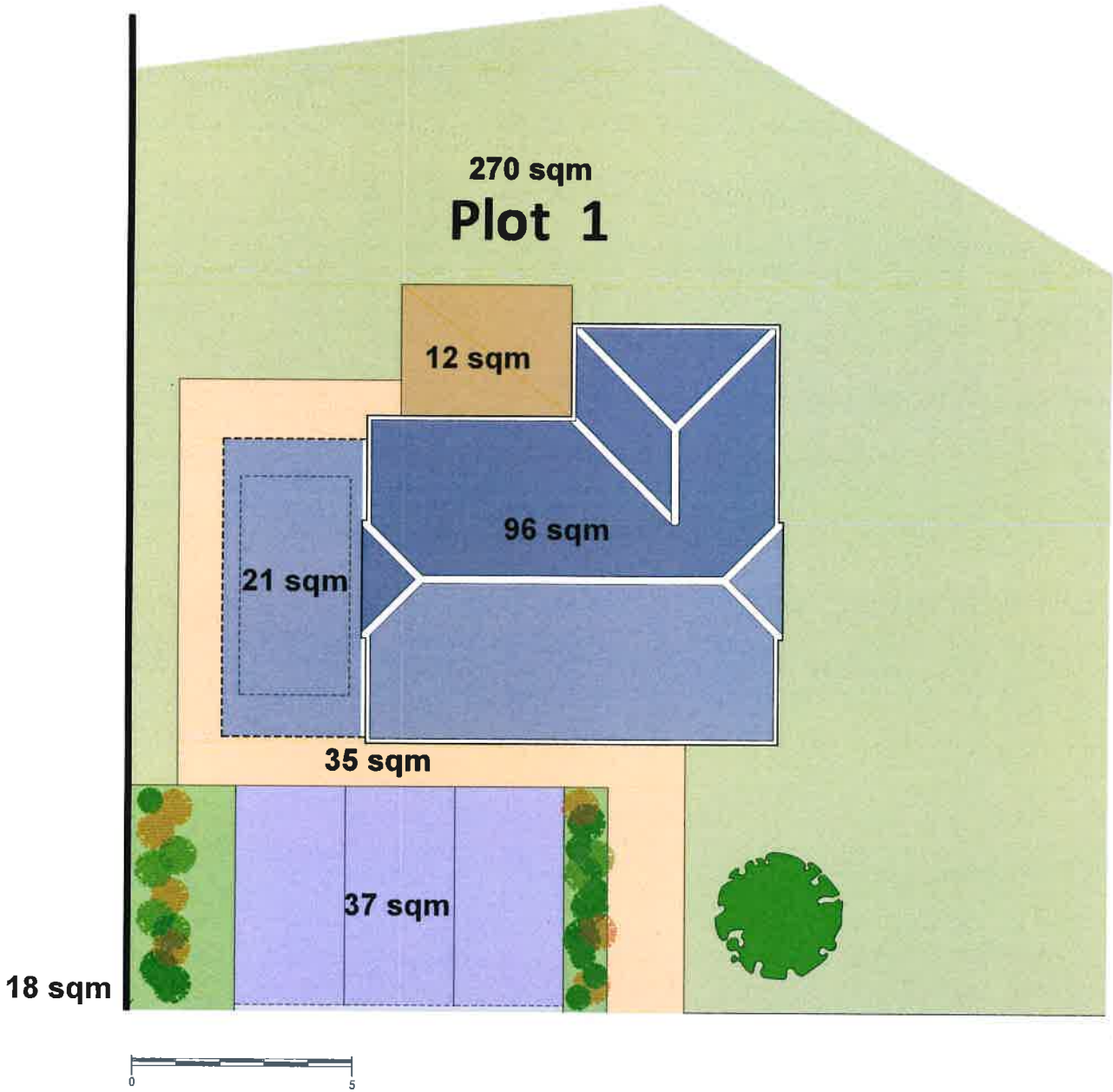
AUGUST 2023

1:200 @ A1 1:400 @ A3

LA2332 007 E

LUNDI ARCHITECTS

# THE DAIRY, CATHERINGTON




# THE DAIRY, CATHERINGTON

PETER ERNEST HOMES LTD

SELF BUILD DEVELOPMENT - 7 UNITS
THE DAIRY,
CATHERINGTON. HANTS

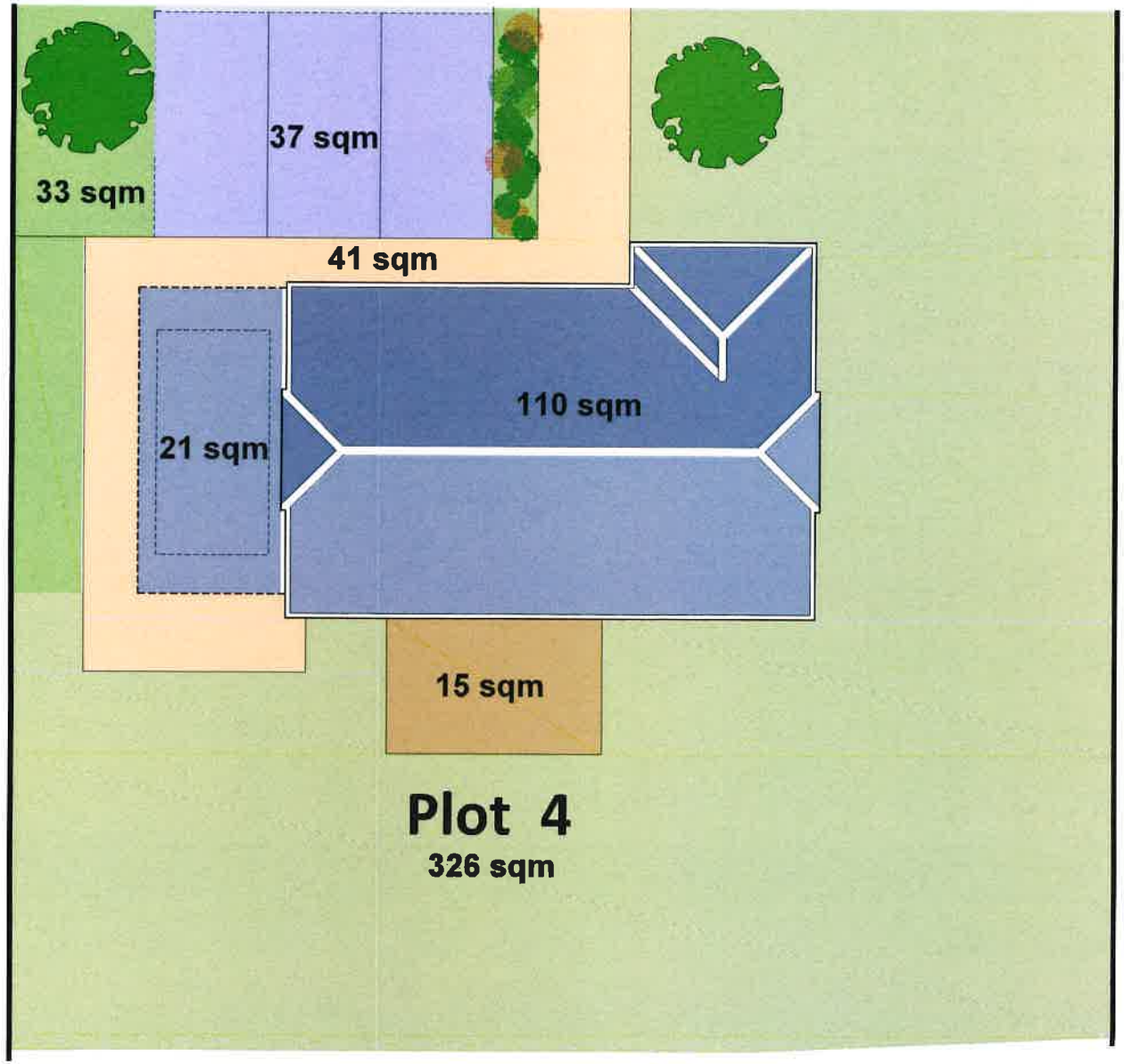
SUMMARY OF AREAS
PLOT 1

AUGUST 2023

1:50 @ A1 1:100 @ A3

LA2332 013

LUNDI ARCHITECTS




# THE DAIRY, CATHERINGTON

PETER ERNEST HOMES LTD

SELF BUILD DEVELOPMENT - 7 UNITS
THE DAIRY,
CATHERINGTON. HANTS

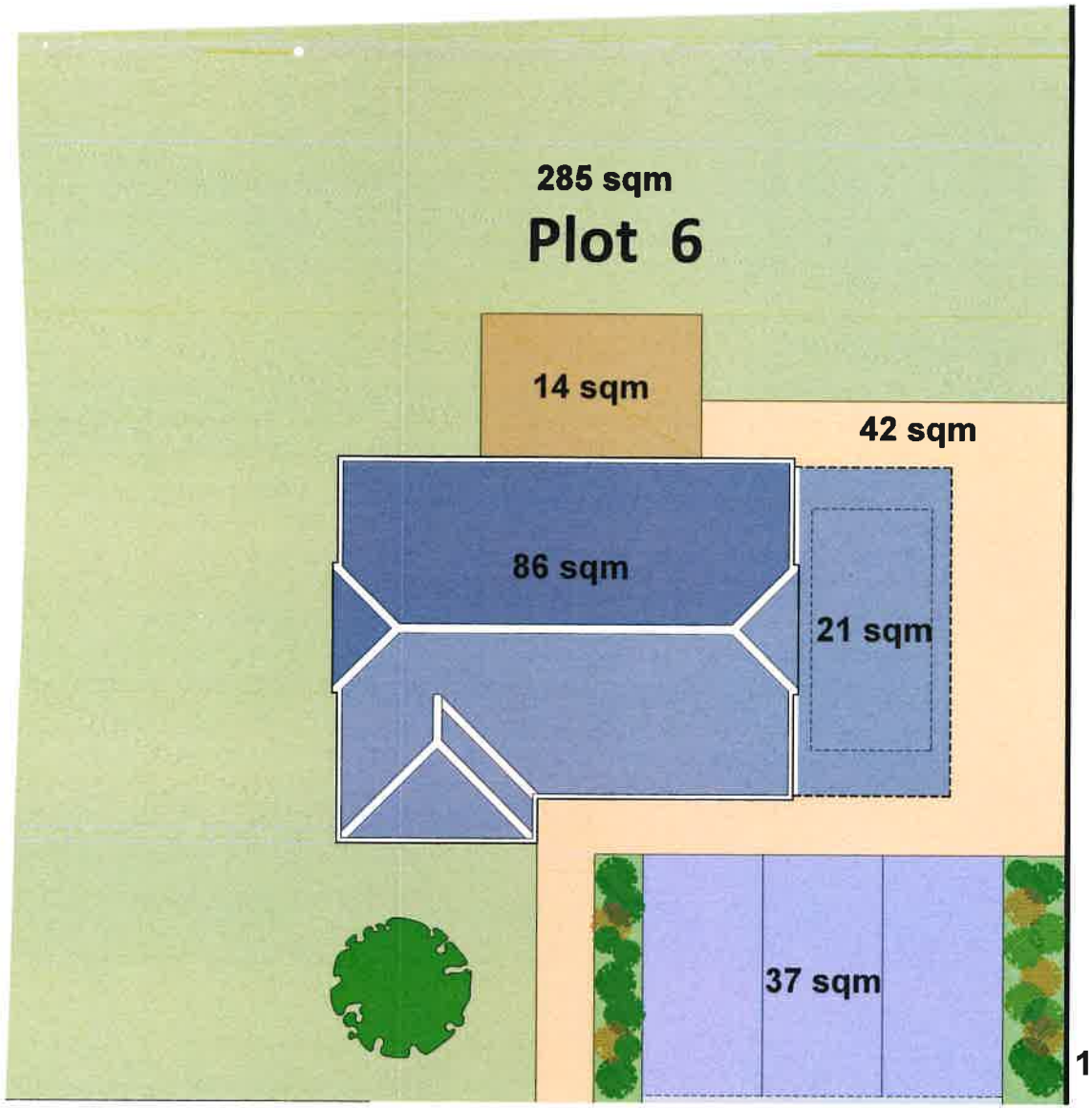
SUMMARY OF AREAS
PLOTS 2 - 5

AUGUST 2023

1:50 @ A1 1:100 @ A3

LA2332 014

LUNDI ARCHITECTS




# THE DAIRY, CATHERINGTON

PETER ERNEST HOMES LTD

SELF BUILD DEVELOPMENT - 7 UNITS
THE DAIRY
CATHERINGTON HANTS

SUMMARY OF AREAS
PLOTS 6 & 7

AUGUST 2023

1:50 @ A1 1:100 @ A3

LA2332 015

LUNDI ARCHITECTS

THE DAIRY, CASTLEREAGH

SURFACE WATER DRAINAGE

| Date | Job No. | Page |
|---|---|---|
| 11/23 | 23/4197 | |
| **Office** | **Engineer** | **Checked** |
| RW | BSH | |

## SELF BUILD SCHEME

### PLOT 1

| | | | m². |
|---|---|---|---|
| Roof | 96.0 + 21.0 | = | 117.0 |
| C/Park | 37.0 | = | 37.0 |
| | | | 154.0 m² |

### PLOT 2-5

| | | | |
|---|---|---|---|
| Roof | (110.0 + 21.0) x 4 | = | 524.0 |
| C/Park | 37 x 4 | = | 148.0 |
| | | | 672.0 m² |

### PLOTS 6 & 7

| | | | |
|---|---|---|---|
| Roof | (86.0 + 21.0) x 2 | = | 214.0 |
| C/Park | 37.0 x 2 | = | 74.0 |
| | | | 288.0m² |

### VISITOR's C/PARK.

(F)H 7.7x5.8 = 44.7m²

THE DAIRY, CATTERLINGTON

SURFACE WATER DRAINAGE

| Date | Job No | Page |
|---|---|---|
| 11/23 | 23/A192 | |
| **Office** | **Engineer** | **Checked** |
| CW | BH | |

## COMMERCIAL UNIT

| | | | m² |
|---|---|---|---|
| (A) R | 10.8 x 6.9 | = | 74.5 |
| (b) R | 4.6 x 1.5 | = | 6.9 |
| (C) H | 10.4 x 5.2 | = | 54.1 |
| (b) H | 5.2 x 2.6 | = | 13.5 |
| | | | 149.0 m² |

## ACCESS ROAD

| | | | m² |
|---|---|---|---|
| (1) H | 5.8 x 18.9 | = | 109.6 |
| (2) H | 86.1 x 6.0 | = | 516.6 |
| | | | 626.2 m² |

THE DAIRY, CATHERINGTON

SURFACE WATER DRAINAGE

| Date | Job No. | Page |
|---|---|---|
| 11/23 | 23/4197 | |
| **Office** | **Engineer** | **Checked** |
| GN | BH | |

## SELF BUILD SCHEME (ADOPTABLE)

### PLOT 1 (SA1)

154.0 m² PER PLOT

FROM COMPUTER PRINT OUT

ADOPT 2.0m x 2.5m x 1.2 DP BELOW INLET INVERT LEVEL.

### COMMERCIAL UNIT (SA2)

149.0m² PER PLOT

FROM COMPUTER PRINT OUT

ADOPT 2.0m x 2.5m x 1.2 DP BELOW INLET INVERT LEVEL.

### ACCESS ROAD / VISITORS / PLOTS 2-5 (SA3)

672.0 + 44.7 + 626.2 = 1342.9 m²

FROM COMPUTER PRINT OUT

ADOPT 1.0m x 43.0 x 1.2m BELOW INLET INVERT LEVEL

### PLOTS 6 & 7 (SA1)

144.0 m² PER PLOT

FROM COMPUTER PRINT OUT ADOPT 2.0m x 2.5m x 1.2m DP BELOW INLET INVERT LEVEL

| Tekla Tedds | Project | | | | Job no. | |
|---|---|---|---|---|---|---|
| Hamill Davies Limited<br>Ivydale<br>Lower Chase Road<br>Swanmore, Southampton SO32 2PB | The Dairy, Catherington | | | | 23/4197 | |
| | Calcs for | | | | Start page no./Revision | |
| | Self Build ( 7 units ) - Plot 1 | | | | 1 | |
| | Calcs by | Calcs date | Checked by | Checked date | Approved by | Approved date |
| | B.H. | 17/11/2023 | | | | |

## SOAKAWAY DESIGN

**In accordance with BRE Digest 365 - Soakaway design**

Tedds calculation version 2.0.04

### Design rainfall intensity

| | |
|---|---|
| Location of catchment area | Other |
| Impermeable area drained to the system | A = **154.0** m² ✓ |
| Return period | Period = **100** yr |
| Ratio 60 min to 2 day rainfall of 5 yr return period | r = **0.350** |
| 5-year return period rainfall of 60 minutes duration | M5_60min = **18.0** mm |
| Increase of rainfall intensity due to global warming | $p_{climate}$ = **50** % |

### Soakaway / infiltration trench details

| | |
|---|---|
| Soakaway type | Rectangular |
| Minimum depth of pit (below incoming invert) | d = **1200** mm ✓ |
| Width of pit | w = **2522** mm ✓ |
| Length of pit | l = **2000** mm ✓ |
| Percentage free volume | $V_{free}$ = **95** % |
| Soil infiltration rate | f = **130.×10⁻⁶** m/s |
| Wetted area of pit 50% full | $a_{s50}$ = l × d + w × d = **5426965** mm² |

### Table equations

| | |
|---|---|
| Inflow (cl.3.3.1) | I = M100 × A |
| Outflow (cl.3.3.2) | O = $a_{s50}$ × f × D |
| Storage (cl.3.3.3) | S = I - O |

| Duration, D (min) | Growth factor Z1 | M5 rainfalls (mm) | Growth factor Z2 | 100 year rainfall, M100 (mm) | Inflow (m³) | Outflow (m³) | Storage required (m³) |
|---|---|---|---|---|---|---|---|
| 5 | 0.36; | 9.6; | 1.90; | 18.3; | 2.82; | 0.21; | 2.61 |
| 10 | 0.51; | 13.7; | 1.97; | 26.9; | 4.15; | 0.42; | 3.72 |
| 15 | 0.62; | 16.7; | 2.00; | 33.4; | 5.14; | 0.63; | 4.50 |
| 30 | 0.79; | 21.2; | 2.03; | 43.0; | 6.62; | 1.27; | 5.35 |
| 60 | 1.00; | 27.0; | 1.99; | 53.8; | 8.29; | 2.54; | 5.75 |
| 120 | 1.22; | 33.0; | 1.95; | 64.3; | 9.90; | 5.08; | 4.82 |
| 240 | 1.50; | 40.4; | 1.89; | 76.2; | 11.74; | 10.16; | 1.58 |
| 360 | 1.69; | 45.6; | 1.84; | 84.2; | 12.96; | 15.24; | 0.00 |
| 600 | 1.95; | 52.6; | 1.79; | 94.2; | 14.51; | 25.40; | 0.00 |
| 1440 | 2.48; | 67.0; | 1.69; | 113.5; | 17.48; | 60.96; | 0.00 |

| | |
|---|---|
| Required storage volume | $S_{req}$ = **5.75** m³ |
| Soakaway storage volume | $S_{act}$ = l × d × w × $V_{free}$ = **5.75** m³ |

***PASS - Soakaway storage volume***

| | |
|---|---|
| Time for emptying soakaway to half volume | $t_{s50}$ = $S_{req}$ × 0.5 / ($a_{s50}$ × f) = 1hr 7min 56s |

***PASS - Soakaway discharge time less than or equal to 24 hours***

✓

| Tekla Tedds | Project | | | | Job no. | |
|---|---|---|---|---|---|---|
| Hamill Davies Limited<br>Ivydale<br>Lower Chase Road<br>Swanmore, Southampton SO32 2PB | The Dairy, Catherington | | | | 23/4197 | |
| | Calcs for | | | | Start page no./Revision | |
| | Self Build ( 7 Units ) - Commercial Unit | | | | 1 | |
| | Calcs by | Calcs date | Checked by | Checked date | Approved by | Approved date |
| | B.H. | 29/09/2023 | | | | |

## SOAKAWAY DESIGN

**In accordance with BRE Digest 365 - Soakaway design**

Tedds calculation version 2.0.04

### Design rainfall intensity

| | |
|---|---|
| Location of catchment area | Other |
| Impermeable area drained to the system | A = **149.0** m² ✓ |
| Return period | Period = **100** yr |
| Ratio 60 min to 2 day rainfall of 5 yr return period | r = **0.350** |
| 5-year return period rainfall of 60 minutes duration | M5_60min = **18.0** mm |
| Increase of rainfall intensity due to global warming | $p_{climate}$ = **50** % |

### Soakaway / infiltration trench details

| | |
|---|---|
| Soakaway type | Rectangular |
| Minimum depth of pit (below incoming invert) | d = **1200** mm ✓ |
| Width of pit | w = **2428** mm ✓ |
| Length of pit | l = **2000** mm ✓ |
| Percentage free volume | $V_{free}$ = **95** % |
| Soil infiltration rate | f = **130.×10$^{-6}$** m/s |
| Wetted area of pit 50% full | $a_{s50}$ = l × d + w × d = **5313286** mm² |

### Table equations

| | |
|---|---|
| Inflow (cl.3.3.1) | I = M100 × A |
| Outflow (cl.3.3.2) | O = $a_{s50}$ × f × D |
| Storage (cl.3.3.3) | S = I - O |

| Duration, D (min) | Growth factor Z1 | M5 rainfalls (mm) | Growth factor Z2 | 100 year rainfall, M100 (mm) | Inflow (m³) | Outflow (m³) | Storage required (m³) |
|---|---|---|---|---|---|---|---|
| 5 | 0.36; | 9.6; | 1.90; | 18.3; | 2.73; | 0.21; | 2.52 |
| 10 | 0.51; | 13.7; | 1.97; | 26.9; | 4.01; | 0.41; | 3.60 |
| 15 | 0.62; | 16.7; | 2.00; | 33.4; | 4.97; | 0.62; | 4.35 |
| 30 | 0.79; | 21.2; | 2.03; | 43.0; | 6.41; | 1.24; | 5.17 |
| 60 | 1.00; | 27.0; | 1.99; | 53.8; | 8.02; | 2.49; | 5.54 |
| 120 | 1.22; | 33.0; | 1.95; | 64.3; | 9.58; | 4.97; | 4.60 |
| 240 | 1.50; | 40.4; | 1.89; | 76.2; | 11.36; | 9.95; | 1.41 |
| 360 | 1.69; | 45.6; | 1.84; | 84.2; | 12.54; | 14.92; | 0.00 |
| 600 | 1.95; | 52.6; | 1.79; | 94.2; | 14.04; | 24.87; | 0.00 |
| 1440 | 2.48; | 67.0; | 1.69; | 113.5; | 16.91; | 59.68; | 0.00 |

| | |
|---|---|
| Required storage volume | $S_{req}$ = **5.54** m³ |
| Soakaway storage volume | $S_{act}$ = l × d × w × $V_{free}$ = **5.54** m³ |

***PASS - Soakaway storage volume***

| | |
|---|---|
| Time for emptying soakaway to half volume | $t_{s50}$ = $S_{req}$ × 0.5 / ($a_{s50}$ × f) = 1hr 6min 51s |

***PASS - Soakaway discharge time less than or equal to 24 hours***

✓

| Tekla Tedds | Project | | | | Job no. | |
|---|---|---|---|---|---|---|
| Hamill Davies Limited<br>Ivydale<br>Lower Chase Road<br>Swanmore, Southampton SO32 2PB | The Dairy, Catherington | | | | 23/4197 | |
| | Calcs for | | | | Start page no./Revision | |
| | Self Build ( 7 units ) - Access Road & Plots 2 - 5 | | | | 1 | |
| | Calcs by | Calcs date | Checked by | Checked date | Approved by | Approved date |
| | B.H. | 17/11/2023 | | | | |

## SOAKAWAY DESIGN

**In accordance with BRE Digest 365 - Soakaway design**

Tedds calculation version 2.0.04

### Design rainfall intensity

| | |
|---|---|
| Location of catchment area | Other |
| Impermeable area drained to the system | A = **1342.9** m² ✓ |
| Return period | Period = **100** yr |
| Ratio 60 min to 2 day rainfall of 5 yr return period | r = **0.350** |
| 5-year return period rainfall of 60 minutes duration | M5_60min = **18.0** mm |
| Increase of rainfall intensity due to global warming | $p_{climate}$ = **50** % |

### Soakaway / infiltration trench details

| | |
|---|---|
| Soakaway type | Rectangular |
| Minimum depth of pit (below incoming invert) | d = **1200** mm ✓ |
| Width of pit | w = **42159** mm ✓ |
| Length of pit | l = **1000** mm ✓ |
| Percentage free volume | $V_{free}$ = **95** % |
| Soil infiltration rate | f = **130.**×**10**$^{-6}$ m/s |
| Wetted area of pit 50% full | $a_{s50}$ = l × d + w × d = **51790585** mm² |

### Table equations

| | |
|---|---|
| Inflow (cl.3.3.1) | I = M100 × A |
| Outflow (cl.3.3.2) | O = $a_{s50}$ × f × D |
| Storage (cl.3.3.3) | S = I - O |

| Duration, D (min) | Growth factor Z1 | M5 rainfalls (mm) | Growth factor Z2 | 100 year rainfall, M100 (mm) | Inflow (m³) | Outflow (m³) | Storage required (m³) |
|---|---|---|---|---|---|---|---|
| 5 | 0.36; | 9.6; | 1.90; | 18.3; | 24.59; | 2.02; | 22.57 |
| 10 | 0.51; | 13.7; | 1.97; | 26.9; | 36.17; | 4.04; | 32.13 |
| 15 | 0.62; | 16.7; | 2.00; | 33.4; | 44.79; | 6.06; | 38.73 |
| 30 | 0.79; | 21.2; | 2.03; | 43.0; | 57.76; | 12.12; | 45.64 |
| 60 | 1.00; | 27.0; | 1.99; | 53.8; | 72.30; | 24.24; | 48.06 |
| 120 | 1.22; | 33.0; | 1.95; | 64.3; | 86.31; | 48.48; | 37.83 |
| 240 | 1.50; | 40.4; | 1.89; | 76.2; | 102.39; | 96.95; | 5.43 |
| 360 | 1.69; | 45.6; | 1.84; | 84.2; | 113.05; | 145.43; | 0.00 |
| 600 | 1.95; | 52.6; | 1.79; | 94.2; | 126.53; | 242.38; | 0.00 |
| 1440 | 2.48; | 67.0; | 1.69; | 113.5; | 152.39; | 581.71; | 0.00 |

| | |
|---|---|
| Required storage volume | $S_{req}$ = **48.06** m³ |
| Soakaway storage volume | $S_{act}$ = l × d × w × $V_{free}$ = **48.06** m³ |

***PASS - Soakaway storage volume***

| | |
|---|---|
| Time for emptying soakaway to half volume | $t_{s50}$ = $S_{req}$ × 0.5 / ($a_{s50}$ × f) = 59min 30s |

***PASS - Soakaway discharge time less than or equal to 24 hours***

✓

| Tekla Tedds | Project | | | | Job no. | |
|---|---|---|---|---|---|---|
| Hamill Davies Limited<br>Ivydale<br>Lower Chase Road<br>Swanmore, Southampton SO32 2PB | The Dairy, Catherington | | | | 23/4197 | |
| | Calcs for | | | | Start page no./Revision | |
| | Self Build ( 7 units ) - Plot 6 & 7 | | | | 1 | |
| | Calcs by | Calcs date | Checked by | Checked date | Approved by | Approved date |
| | B.H. | 17/11/2023 | | | | |

## SOAKAWAY DESIGN

**In accordance with BRE Digest 365 - Soakaway design**

Tedds calculation version 2.0.04

### Design rainfall intensity

| | |
|---|---|
| Location of catchment area | Other |
| Impermeable area drained to the system | A = **144.0** m² ✓ |
| Return period | Period = **100** yr |
| Ratio 60 min to 2 day rainfall of 5 yr return period | r = **0.350** |
| 5-year return period rainfall of 60 minutes duration | M5_60min = **18.0** mm |
| Increase of rainfall intensity due to global warming | $p_{climate}$ = **50** % |

### Soakaway / infiltration trench details

| | |
|---|---|
| Soakaway type | Rectangular |
| Minimum depth of pit (below incoming invert) | d = **1200** mm ✓ |
| Width of pit | w = **2333** mm ✓ |
| Length of pit | l = **2000** mm ✓ |
| Percentage free volume | $V_{free}$ = **95** % |
| Soil infiltration rate | f = **130.×10⁻⁶** m/s |
| Wetted area of pit 50% full | $a_{s50}$ = l × d + w × d = **5199608** mm² |

### Table equations

| | |
|---|---|
| Inflow (cl.3.3.1) | I = M100 × A |
| Outflow (cl.3.3.2) | O = $a_{s50}$ × f × D |
| Storage (cl.3.3.3) | S = I - O |

| Duration, D (min) | Growth factor Z1 | M5 rainfalls (mm) | Growth factor Z2 | 100 year rainfall, M100 (mm) | Inflow (m³) | Outflow (m³) | Storage required (m³) |
|---|---|---|---|---|---|---|---|
| 5 | 0.36; | 9.6; | 1.90; | 18.3; | 2.64; | 0.20; | 2.43 |
| 10 | 0.51; | 13.7; | 1.97; | 26.9; | 3.88; | 0.41; | 3.47 |
| 15 | 0.62; | 16.7; | 2.00; | 33.4; | 4.80; | 0.61; | 4.19 |
| 30 | 0.79; | 21.2; | 2.03; | 43.0; | 6.19; | 1.22; | 4.98 |
| 60 | 1.00; | 27.0; | 1.99; | 53.8; | 7.75; | 2.43; | 5.32 |
| 120 | 1.22; | 33.0; | 1.95; | 64.3; | 9.25; | 4.87; | 4.39 |
| 240 | 1.50; | 40.4; | 1.89; | 76.2; | 10.98; | 9.73; | 1.25 |
| 360 | 1.69; | 45.6; | 1.84; | 84.2; | 12.12; | 14.60; | 0.00 |
| 600 | 1.95; | 52.6; | 1.79; | 94.2; | 13.57; | 24.33; | 0.00 |
| 1440 | 2.48; | 67.0; | 1.69; | 113.5; | 16.34; | 58.40; | 0.00 |

| | |
|---|---|
| Required storage volume | $S_{req}$ = **5.32** m³ |
| Soakaway storage volume | $S_{act}$ = l × d × w × $V_{free}$ = **5.32** m³ |

***PASS - Soakaway storage volume***

| | |
|---|---|
| Time for emptying soakaway to half volume | $t_{s50}$ = $S_{req}$ × 0.5 / ($a_{s50}$ × f) = 1hr 5min 36s |

***PASS - Soakaway discharge time less than or equal to 24 hours***

✓