



Drainage Verification Report



**Land at Angels Nursery,
Yapton Road,
Barnham,
PO22 0AY**

Rev: A

Date: 13/11/2024

Document Control

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	Name	Position	Date
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A	13/11/2024	Initial issue following receipt of all reports, surveys, as built calculations, and photographs.	COB

Contents

1	Executive Summary	1
1.1	Overview	1
1.2	Scope	1
1.3	Details of Reviewing Drainage Engineer	2
1.4	Summary of Review	2
2	Key Documentation.....	3
2.1	Approved Plans	3
2.2	Construction Plans	3
3	Statutory Approvals and Management Company	6
3.1	Statutory Approvals	6
3.2	Ordinary Watercourse Consents	7
3.3	Management Company	7
4	Construction Activities	8
4.1	Photos	8
4.2	As Built Survey	9
4.3	Completion CCTV Survey	9
4.4	Variations during the Construction Period.....	10
5	Remedial Works	11
5.1	Identified Defects and Remedial Works	11
5.2	Ditch Maintenance Works	11
6	Technical Review and Analysis	12
6.1	As Built Analysis	12
6.2	As Built Calculations	12
6.3	Finished Floor Levels	13
6.4	Surface Water Drainage	13
6.5	Foul Water Drainage	13
6.6	Recommendations.....	14

Appendices

Appendix A	Key Approved Plans
Appendix B	Construction Drawings
Appendix C	Statutory Approvals
Appendix D	Photos
Appendix E	As Built Surveys
Appendix F	CCTV Surveys
Appendix G	Analysis
Appendix H	As Built Calculations
Appendix I	Correspondence

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1 Executive Summary

1.1 Overview

- 1.1.1 This report has been prepared for the purposes of demonstrating that the site sustainable drainage has been constructed in accordance with the design and therefore deemed fit for purpose.
- 1.1.2 This report considers all components of the surface water drainage system i.e., pipes, manholes, gullies, basins, headwalls, culverts, ditches, flow controls, permeable pavements, storage tanks, land drains, etc. As constructed floor levels should also be verified/considered to ensure no increase in flood risk.
- 1.1.3 Planning condition 3 of the Full Planning Approval (Ref No: BN/93/19/PL as revised by S73 ref BN/84/20/PL) states the following:

Immediately following implementation of the approved SuDS scheme and prior to occupation of any part of the development, the developer/applicant shall provide the Local Planning Authority with as-built drawings of the implemented scheme together with a completion report prepared by an independent engineer that confirms that the scheme was built in accordance with the approved drawing/s and is fit for purpose. There shall be no deviation to the approved scheme other than with the written consent of the Local Planning Authority. The scheme shall thereafter be maintained in perpetuity.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with Policy D DM1, Policy W DM1 and Policy W DM3 of the Arun Local Plan.

1.2 Scope

- 1.2.1 The verification report includes details of all key drainage components, evidencing that the construction of these elements has been completed fully in accordance with the approved design (as cited in the Planning Decision Notice).
- 1.2.2 For ease of reference, the following list of key requested information can be used to signpost the reader to the relevant verification report section and to ensure that this report comprehensively covers the scope of the condition wording:
- Details of author, including independence, qualifications, and experience. – [Section 1.3](#)
 - Clear statement on whether the author believes the constructed surface water drainage is adequate and whether any identified issues will affect the operation, maintenance and performance of the drainage system, now or in the future. – [Section 1.4](#)
 - Dates and appropriate records of inspections undertaken by the report author. Photographs and details of components inspected. e.g. excavations, crate installations, sub base construction, etc – [Section 4.1.7](#)
 - Confirmation of how key materials were verified, e.g. inspection of goods receipts for key components such as tanks, geomembranes, sub-base materials, flow control devices; inspections and tests of welded membrane joints; etc. – [Section 4.1.7](#)

- Commentary on 'As Built' survey, and details of any variations from approved design. This includes any discrepancies in ground levels and pipe/structure levels. – [Section 4](#)
- Provide CCTV survey video footage (including reports) of pipelines. – [Section 4.3](#)
- Confirmation that no trees have been located in areas which would be detrimental to the drainage infrastructure. – [Section 6.4.8](#)
- Confirmation that there has been no unauthorised land raising or watercourse infilling/culverting/alterations. – [Section 6.4.9](#)
- Where variations have occurred the report shall include supporting evidence to show that the as constructed drainage will meet policy requirements and that these variations have been reviewed and approved by the designer. This may require new calculations to be completed and be provided with the verification report. Any significant deviation from the approved design may require a 'Discharge of Condition' application to be re-submitted. – [Section 2.2, 4.4, and 6.2](#)
- Details of remedial works that are required or have been carried out. – [Section 4.1.3, 4.1.5 and 5.1](#)

1.3 Details of Reviewing Drainage Engineer

1.3.1 The key details of the reviewing engineer are as follows:

Name of Author:	Christian O'Brien MEng CMAPS, Technical Director, Redrow Southern Counties
Qualifications:	Master of Civil Engineering and Certified Principal Designer
Experience:	10+ Years' Experience in Civil Engineering Drainage Design Consultancy and Client / Principal Designer at PLC house builders who design and construct surface water drainage systems.
Impartiality:	The report author joined Redrow on 10 th August 2024 with <u>no prior knowledge on this site</u> . An independent fresh review has been undertaken using the Arun District Council's Supplementary requirements for surface water drainage proposals and specifically the Surface water drainage verification condition guidance note, as a framework for the review. This methodology was agreed with the LLFA's Drainage Engineer (Paul Cann) in recent discussions.

1.4 Summary of Review

- 1.4.1 Following a review of the collated As Built information, it is our view that the foul and surface water drainage has been constructed as per the agreed scheme.
- 1.4.2 There does not appear to be any issues identified within the collated As Built information that will affect the operation, maintenance and performance of the drainage system, now or in the future. It is however imperative that the approved Drainage Management Manual is strictly followed by the Management Company in perpetuity in order to ensure that the constructed Sustainable Drainage Systems (SuDS) operate as intended for its design life.
- 1.4.3 It is therefore recommended that the planning condition is fully discharged.

2 Key Documentation

2.1 Approved Plans

2.1.1 The approved drainage plans are that defined by all documents submitted and approved under Condition 2 of the planning permission (revised S73 ref BN/84/20/PL dated 27th November 2020).

2.1.2 For the purpose of this verification report, the following approved plans are considered to be key approved plans for comparison and review purposes:

- 19812-GS-Z1-XX-DR-C-2060-**C4**_Site Drainage Sheet 1 of 2
- 19812-GS-Z1-XX-DR-C-2061-**C3**_Site Drainage Sheet 2 of 2
- 19812-GS-Z1-XX-DR-C-2106-**C1**_Outfall headwall details
- 19812-GS-Z1-XX-DR-C-2107-**C1**_Ditch and Land Drain details
- 19812-GS-Z1-XX-DR-C-2108-**C1**_Pond Sections
- 19812-GS-Z1-XX-DR-C-2109-**C1**_Ditch Long sections
- 19812-GS-Z1-XX-DR-C-2113-**C1**_Concrete catchpit with wier wall

2.1.3 The approved landscaping plans are that defined by all documents submitted and approved under the approved planning application revised S73 ref BN/84/20/PL dated 27th November 2020:

- P19-2044_02 Rev. **D** - Detailed Public Open Space Landscape Proposals Sheet 1 of 2
- P19-2044_02 Rev. **D** - Detailed Public Open Space Landscape Proposals Sheet 2 of 2

2.1.4 The approved landscaping plans are that defined by all documents submitted and approved on 12th February 2021 (BN/1/21/DOC) under Condition 8 of the planning permission (revised S73 ref BN/84/20/PL dated 27th November 2020):

- 17890 01 Rev. **B** - Enhanced Proposals Sheet 1 of 2
- 17890 02 Rev. **B** - Enhanced Proposals Sheet 2 of 2

2.1.5 These drawings are presented in **Appendix A - Key Approved Plans** for reference.

2.2 Construction Plans

2.2.1 Due to the approved plans representing the scheme pre-construction, it is understood that there were elements of the design that required further investigation once construction could initially commence, for example, the exact levels of the outfall sewer and pressured rising main on the site.

2.2.2 The following drawings were used as construction plans, with variations compared to the approved plans clearly stated, with latest revision noted in **red**:

- 19812-GS-Z1-XX-DR-C-2060-**C9**_Site Drainage Sheet 1 of 2
 - Revision Notes from C4:
 - C5 – Foul sewer backdrop invert levels amended. Surface water connections into S32 revised (08/10/2020)
 - C6 – Revised to Southern Water comments (15/10/2020)
 - C7 – DT reference numbers added (16/11/2020)
 - C8 – Revised to possible conservatories (25/02/2021)
 - C9 – Updated to GTA title block (10/12/2021)
- 19812-GS-Z1-XX-DR-C-2061-**C9**_Site Drainage Sheet 2 of 2
 - Revision Notes from C3:
 - C4 – Foul sewer backdrop invert levels amended. Surface water connections into S32 revised (08/10/2020)
 - C5 – Revised to Southern Water comments (15/10/2020)
 - C6 – DT reference numbers added (16/11/2020)
 - C7 – Revised to WSCC highway comments (18/11/2020)
 - C8 – Revised to possible conservatories (25/02/2021)
 - C9 – Updated to GTA title block (10/12/2021)
- 19812-GS-Z1-XX-DR-C-2106-**C2**_Outfall headwall details
 - Revision Notes from C1:
 - C2 – Updated to GTA title block (13/12/2021)
- 19812-GS-Z1-XX-DR-C-2107-**C2**_Ditch and Land Drain details
 - Revision Notes from C1:
 - C2 – Updated to GTA title block (13/12/2021)
- 19812-GS-Z1-XX-DR-C-2108-**C2**_Pond Sections
 - Revision Notes from C1:
 - C2 – Updated to GTA title block (13/12/2021)
- 19812-GS-Z1-XX-DR-C-2109-**C2**_Ditch Long sections
 - Revision Notes from C1:
 - C2 – Updated to GTA title block (13/12/2021)

- 19812-GS-Z1-XX-DR-C-2113-**C2**_Concrete catchpit with wier wall
 - *Revision Notes from C1:*
 - C2 – Updated to GTA title block (13/12/2021)

2.2.3 These drawings are presented in **Appendix B - Key Construction Plans** for reference.

2.2.4 From a review of the revision note details it is evident that minor drawing revisions were made for coordination purposes, along with revisions to address WSCC and Southern Water comments, all of which would have contributed towards achieving a complaint sewer system (e.g. with the S104). As such, these revisions are considered insignificant and there were no material variations of the design.

2.2.5 These drawing revision changes are deemed negligible compared to the approved plans but will be assessed against the As Built documentation.

3 Statutory Approvals and Management Company

3.1 Statutory Approvals

3.1.1 The development has secured various statutory approvals and are presented in **Appendix C – Statutory Approvals**.

3.1.2 The following summarises the statutory approvals under Section 106 (rights to connect) of the Water Act 1991 received to date:

1. Surface Water

- **N/A** – scheme does not outfall to an adopted surface water sewer.

2. Foul Water

○ **201124 Southern Water - FW - S106 Approval Certificate**

- Notice of consent to connect to a public sewer. This letter confirms that Local Water Authority have given their conditional consent for the proposed connection to the public foul water sewer.
- *Date of issue:* 24th November 2020
- *DS Reference:* DS_CPS-112492

○ **201216 Southern Water - FW - S106 Completion Certificate**

- Completion certificate for the connection to a public sewer. Following a site inspection of the manhole by the Local Water Authority, this certificate authenticates the standards to which the connection works were
- *Date of issue:* 16th December 2020
- *DS Reference:* DS_CPS-112492

3.1.3 The following summarises the statutory approvals under Section 104 (sewer adoption) of the Water Act 1991 received to date:

3. Foul and Surface Water

○ **201201 Southern Water - S104 Technical Approval Certificate**

- Technical Approval certificate. Technical Approval is hereby granted in response to the application for a S104 Adoption under the Water Industry Act 1991.
- *Date:* 01st December 2020
- *Site Reference:* DS_AOS104-120097 (002788)

○ **221122 Southern Water - S104 Provisional Certificate**

- Provisional completion certificate, demonstrating substantial completion and constructed in accordance with the Agreement. The Works are to be placed upon a 12-month maintenance period from 11th November 2022.
- *Date:* 22nd November 2022
- *Site Reference:* SWS-S104-002788

○ **231214 Southern Water - S104 Final Certificate**

- Final completion certificate, demonstrating final inspection by the Local Water Authority after the maintenance period and as such the sewer system is proposed for adoption.
- *Date:* 14th December 2023
- *Site Reference:* SWS-S104-002788

○ **231214 Southern Water - S104 Vesting Certificate**

- Vesting certificate, confirming that the Local Water Authority have fully adopted the associated apparatus and released the surety bond.
- *Date:* 14th December 2023
- *Site Reference:* SWS-S104-002788

- 3.1.4 The above evidence demonstrates in full that the development secured all necessary statutory approvals, including relevant consents and completion certificates from the Local Water Authority.

3.2 Ordinary Watercourse Consents

- 3.2.1 An Ordinary Watercourse Consent was submitted to the LLFA. This application in relation to the permanent works was deemed acceptable by the LLFA on 12th August 2020

- 3.2.2 The consent (number LDC/ARUN/2020/017) was issued under Section 23, Sections 17 and 20(2), and Section 61F of the Land Drainage Act 1991 and related to the following areas on the site:

Connections of 225mm diameter surface water drain via headwall (Flow is restricted to 7.3 l/s).

Replacement and extension of existing culvert with 600mm diameter pipe and associated headwalls.

Partial infilling of eastern boundary ditch and connection of 150mm diameter land drain with headwall.

- 3.2.3 A copy of the consent letter is presented in **Appendix C – Statutory Approvals**.

3.3 Management Company

- 3.3.1 The development management company details are as follows:

- *Company Name:* Windmill Views Management Company (Barnham) Limited
- *Company Number:* 13160527
- *Registered Address:* Redrow House, St. Davids Park, Ewloe, Flintshire, CH5 3RX
- *Date of Incorporation:* 27th January 2021

- 3.3.2 A managing agent will act on behalf of the management company, whose details are as follows:

- *Managing Agent:* Remus Management Limited
- *Company Number:* 02570943
- *Address:* Fisher House, 84 Fisherton Street, Salisbury, Wiltshire, UK, SP2 7QY
- *Telephone:* 01722 328685
- *Website:* <https://www.remus.uk.com/>
- *Email:* info@remus-mgmt.co.uk

- 3.3.3 The managing agent have confirmed that they are managing all landscaping and SuDS maintenance within the blue line shown on **240219 Remus Man Co - Conveyance Plan Rev D** in accordance with CIRIA's Best Practice Guidelines as detailed on their proposal **200907 Remus Man Co - Barnham SuDS Service Charge** and can both be seen in **Appendix C – Statutory Approvals**.

4 Construction Activities

4.1 Photos

4.1.1 A suite of photos recording all drainage constructed on the site was undertaken by the groundworks contractor carrying out the works and is presented in **Appendix D – Photos**. Dates are included where relevant for each photo which are also ordered as per the network system run / direction of flow and titled accordingly for each respective drainage feature.

4.1.2 The photos have been used to validate the information shown within the As Built survey and As Built drawing as detailed in Section 6.

4.1.3 However, following a thorough review of all received photos and for ease, the following list contains the outstanding actions as noted in red within the found within **Appendix B – Photos**:

- **Surface Water Drainage – SMH1 and constructed weir wall**
 - 09/07/2024 – Manhole located but was not lifted in As Built Survey Alternative evidence or further investigation required.
- **Surface Water Drainage – SMH2 and installed hydrobrake**
 - 09/07/2024 – Manhole could not be located, so was not lifted. Further investigation required. Alternative evidence or further investigation required.
- **Surface Water Drainage – Offline Cellular Storage Tank**
 - 09/07/2024 – No photo evidence other than the one headwall which only connects to the attenuation crates. Alternative evidence or further investigation required.

4.1.4 Further photos or evidence will need to be requested from the groundworks contractor in order to close out these items in abeyance.

4.1.5 Following some on site remedial works to identify the gaps in the data, the following list contains the completed items as demonstrated by photos in red within the found within **Appendix B – Photos**:

- **Surface Water Drainage – SMH1 and constructed weir wall**
 - 30/08/2024 – Manhole lifted in As Built Survey revisit. Incorrectly installed hydrobrake which does not match the design.
 - 12/10/2024 – Hydrobrake removed and now correctly installed the non-return valve in accordance with drawing 19812-GS-Z1-XX-DR-C-2113 Rev C2.
- **Surface Water Drainage – SMH2 and installed hydrobrake**
 - 30/08/2024 – Manhole lifted in As Built Survey revisit. Correctly installed hydrobrake which matches the design.
- **Surface Water Drainage – Offline Cellular Storage Tank**
 - 30/08/2024 – Rodding eye and vent pipe not shown on site or survey.
 - 28/09/2024 – Buried rodding eye located and raised to surface. Cowl fitted on buried vent pipe.
 - 28/09/2024 – “Windmill View Addendum 2 11 22” Report dated 02/11/2022 from TDS demonstrates photos of the cellular storage tank, pond, pond liner, and permeable paving.

4.1.6 The above photos demonstrate all items have been constructed in accordance with the drawing.

- 4.1.7 Inspection of goods receipts for key components such as tanks, geomembranes, sub-base materials, flow control devices; inspections and tests of welded membrane joints are not available. However, the details of the permeable paving, pond, and crates within the report written by TDS dated 02/11/2022 within **Appendix B – Photos** provides all necessary evidence that it is built in accordance with the design.

4.2 As Built Survey

- 4.2.1 Various As Built surveys have been received to date and are presented in **Appendix E – As Built Survey**.
- 4.2.2 The first survey undertaken on 27th June 2024 was by Encompass Surveys Ltd who were instructed by the developer to complete an independent survey of the constructed works against GPS coordinates and levels mAOD. FFLs, CLs, ILs, pipe materials, and pipe diameters were all recorded as part of this survey.
- 4.2.3 A second survey revision was undertaken on 09th July 2024 to survey missed areas of the surrounding ditch course which was part of the Ordinary Watercourse Consent, along with missing manholes SMH1 and SMH2.
- 4.2.4 A third survey revision was undertaken on 28th August 2024 to attempt to locate SMH1 which was buried.
- 4.2.5 A fourth survey revision was undertaken on 03rd October 2024 to attempt to survey the now located SMH1 and raised cowl and rod pipe for the below ground storage tanks. The drawing number for this survey is **ENC/270624/3459/S1 Rev D**.
- 4.2.6 This survey concludes all as built items and is considered final.

4.3 Completion CCTV Survey

- 4.3.1 Several CCTV surveys have been received to date and are presented in **Appendix F – CCTV Surveys**.
- 4.3.2 The first survey undertaken on 06th November 2021 was by Allround Plant Ltd who were instructed to complete an independent CCTV survey of the constructed surface water network. The survey
- 4.3.3 The full CCTV survey video footage has been issued to the LLFA, however the reports presented in **Appendix F – CCTV Surveys** provide concise and coherent summaries of the survey in a more user friendly format.
- 4.3.4 From review of the CCTV, it was identified that the following items were missing:
- SMH1 to Cellular Storage Tank
 - SMH1 to Outfall
 - SMH2 to Ditch Outfall
- 4.3.5 As such, an additional CCTV report was completed on 03rd October 2024 to cover all of the above items and now demonstrates that all below ground drainage runs were now captured via CCTV and accurate as per the plans.

4.4 Variations during the Construction Period

- 4.4.1 In addition to the revisions detailed in Section 2.2 and from review of correspondence and As-Built drawings, there is a range of variations that were agreed during the construction period as follows:
- The culvert to the west of the site for a proposed emergency access / cycle link as agreed during the Land Drainage Consent application was omitted as the link was not required to be delivered and therefore it remained as open ditch course. This has been reviewed on site by Paul Cann and confirmed suitable and complete as of 05th November 2024.
- 4.4.2 The variations observed appear to be insignificant and have no impact on proposed design as the overall strategy remains the same as approved.
- 4.4.3 There were no further variations during the construction period compared to the earlier revision of this report.

5 Remedial Works

5.1 Identified Defects and Remedial Works

- 5.1.1 No further defects to that described in Section 4.1.5 were identified from the site team or as part of this verification report by review of the information supplied to date. As such, no further remedial works are required.

5.2 Ditch Maintenance Works

- 5.2.1 As shown by the photos from landscaping contractor within **Appendix D – Photos**, the surrounding site ditches have had vegetation cutting, clearing of debris, and general maintenance work completed.

6 Technical Review and Analysis

6.1 As Built Analysis

- 6.1.1 The differences between the As Built Survey drawing (Appendix E) and the construction drawings (Appendix B) have been reviewed at each drainage feature and is presented in **Appendix G – Analysis** within the document titled '*Drainage Design Analysis Compared to As Built Drainage*'.
- 6.1.2 The variance observed between cover levels on the As Built foul and surface water drainage is -0.025m (25mm) or -0.26%. This is deemed acceptable and within normal construction tolerances.
- 6.1.3 The variance observed between invert levels (IL) on the As Built foul and surface water drainage is -0.043m (43mm) or -0.54%. This is deemed acceptable and within normal construction tolerances.
- 6.1.4 All pipe sizes have remained exactly as per the approved design.
- 6.1.5 All pipe material have remained exactly as per the approved design
- 6.1.6 The national grid reference (Easting and Northing) of all key drainage elements have been clearly stated on the As Built Survey drawing number *ENC/270624/3459/S1 Rev D* in **Appendix E – As Built Survey**.

6.2 As Built Calculations

- 6.2.1 In order to ensure that the constructed As Built surface water network and the minor variations identified through construction tolerances are compared to the approved scheme in a robust manner, a revised set of hydraulic calculations have been undertaken to compare against the approved calculations.
- 6.2.2 These calculations are presented in **Appendix H - As Built Calculations** within the document named '*241113 7033 As -Built SW Network results 1 in 2,30,100 year + 40% cc*'.
- 6.2.3 Calculations have been produced for the 1 in 2, 1 in 30, and 1 in 100 year + 40% Climate Change event for the surface water network as per the approved calculations.
- 6.2.4 In order to accurately represent what has been constructed, the As Built calculations use all information such as cover level and invert level from the As Built surveys. It also includes As Built survey levels from the basins and regraded ditch network, where a 3D model was produced for the basin to replicate the data within the hydraulic modelling software.
- 6.2.5 The calculations demonstrate that the as constructed network is still in accordance with the design scheme hydraulic modelling output as approved at planning.
- 6.2.6 The key difference between the approved calculations in Appendix A – Key Approved Plans and the as built calculations is a previously surcharged manhole now showing a modelled small volume of flooding on pipe 1.004 / MH S7, which is likely due to the flatter As-Built run downstream of this. However, it is only 0.7m³ and only in a 1 in 100 year storm event plus climate change allowance, which will result in a minimal amount contained within the road, and unlikely to cause flooding elsewhere. This is therefore deemed acceptable and again within typical construction tolerances.

6.3 Finished Floor Levels

- 6.3.1 As part of this drainage verification report and as captured by the As Built survey for the development, the constructed FFLs within the vicinity of the SuDS basin have been reviewed on a plot by plot basis and is presented in **Appendix G – Analysis** within the document titled '*FFL Design Analysis Compared to As Built FFL*'.
- 6.3.2 The FFLs have been constructed on average 64mm higher than the approved levels, so are deemed acceptable. This is a variance of 0.65%.

6.4 Surface Water Drainage

- 6.4.1 Upon technical review and analysis of the As Built information provided so far, it has been demonstrated that the surface water drainage system has been constructed as per the agreed scheme.
- 6.4.2 Minor variations have been detailed and all are deemed acceptable, as demonstrated by the As Built calculations, As Built drawings, photos, surveys, and CCTV surveys.
- 6.4.3 The management company details have been provided. Where relevant to adoptable drainage, the associated statutory consents, technical approvals, and completion certificates have been provided.
- 6.4.4 The national grid reference of all key drainage elements have been clearly stated on the As Built survey drawing.
- 6.4.5 There does not appear to be any issues identified within the collated As Built information that will affect the operation, maintenance and performance of the drainage system, now or in the future.
- 6.4.6 The As Built network has also been proven by hydraulic modelling to have no significant impact on the constructed network performance.
- 6.4.7 The Contractor has confirmed that all surface water laterals have been installed in accordance with the approved drawings and are functioning correctly as intended. The Contractor have also confirmed that all permeable paving has been constructed to the depths and details on the associated construction drawings. Please refer to letter within **Appendix I – Correspondence**.
- 6.4.8 Following an onsite inspection and review of the as built survey, no trees have been located in areas which would be detrimental to the drainage infrastructure.
- 6.4.9 Paul Cann of Arun District Council has recently visited the site and confirmed that works associated with the Land Drainage Consent are now complete. This also confirms that there has been no unauthorised land raising or watercourse infilling / culverting / alterations as the agreed works are completed and inspected.

6.5 Foul Water Drainage

- 6.5.1 Upon technical review and analysis of the As Built information provided, it has been demonstrated that the foul water drainage system has been constructed in full as per the agreed scheme.
- 6.5.2 There does not appear to be any issues identified within the collated As Built information that will affect the operation, maintenance and performance of the drainage system, now or in the future.

6.5.3 The contractor has confirmed that all foul water laterals have been installed in accordance with the approved drawings and are functioning correctly as intended.

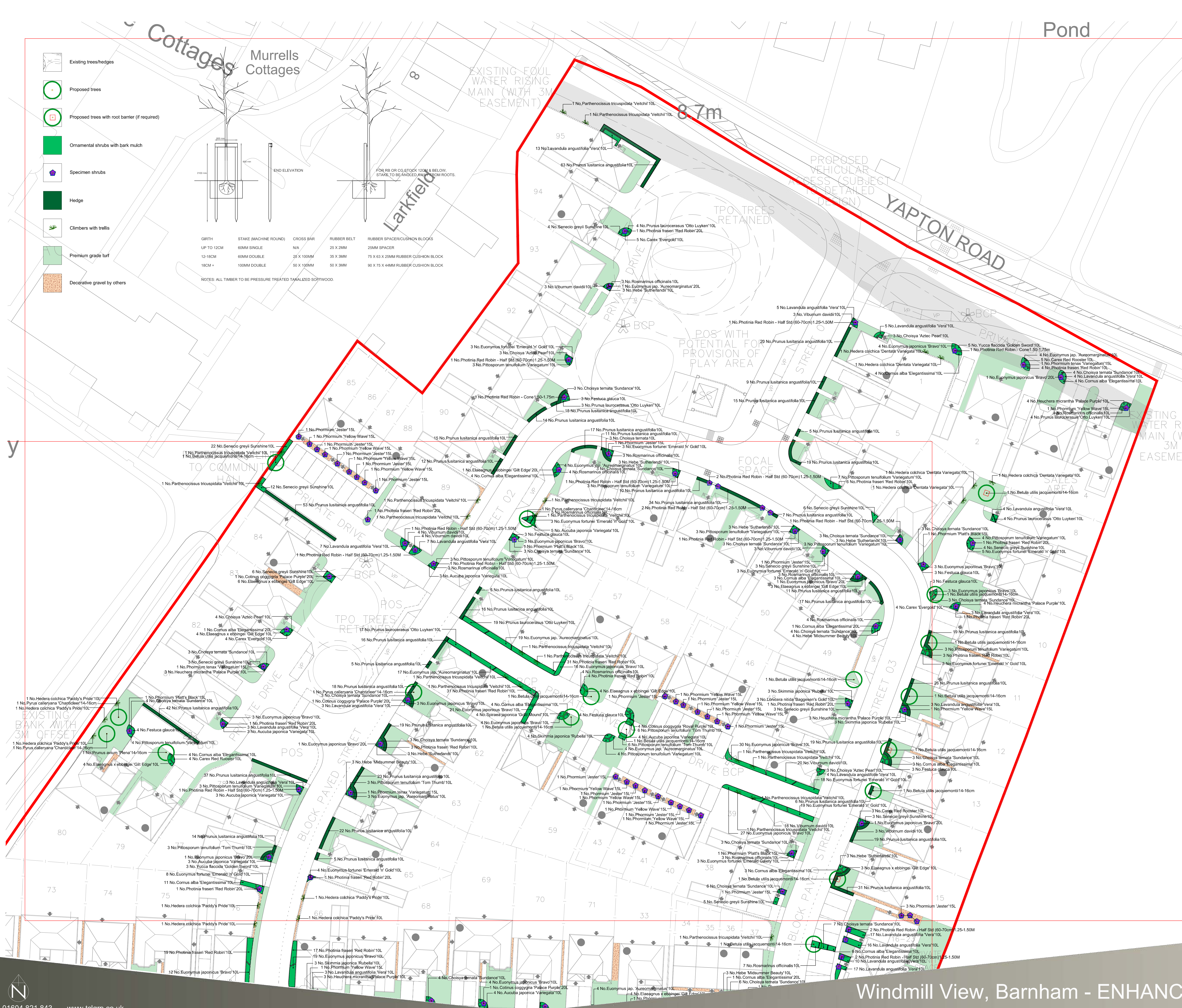
6.5.4 Southern Water have adopted the mains and it is vested in their network.

6.6 Recommendations

6.6.1 To conclude, recommendation remains that all can be occupied and the full discharge of condition should be granted by the LPA.

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Appendix A Key Approved Plans



A. SETTING OUT.

1. PLANTING SHALL BE SET OUT AS INDICATED ON THE DRAWING. ALL BEDS TO BE A MINIMUM OF 1 METRE WIDE AND MEASURED FROM EXISTING FIXED POINTS.

2. IF THE BED IS SEALED WITH CONCRETE THE CONTRACTOR SHALL INFORM THE SITE MANAGER OR LANDSCAPE ARCHITECT TO DETERMINE IF FOOTINGS ARE EXCESSIVE AND CAN BE REDUCED OR PAVED.

B. GROUND PREPARATION.

1. THE FOLLOWING WORKS SHOULD BE CARRIED OUT TO EXISTING TOPSOIL TO ENSURE IT CONFORMS TO BS 3882 1994. TOPSOIL SHOULD BE FREE FROM ROCKS LARGER THAN 50MM IN DIAMETER, CONCRETE, WIRE, BRICK, ALL ROOTS AND LESS THAN 20% CLAY.

C. PLANTING.

1. ALL PLANTING TO BE WATERED IN WITH 20 LITRES PER SQUARE METER. TREES SHALL BE WATERED IN WITH 25 LITRES PER TREE POSITION. TREES TO INCLUDE IRRIGATION PIPES.

2. TREES TO INCLUDE 1.6M CHESTNUT STAKE 60MM ABOVE GROUND AND 100MM BELOW THE GROUND AND 1 NO. TREE TIE AND SPACER.

3. TURF TO BE PREMIUM GRADE CULTIVATED TURF.

4. ALL CLIMBERS TO INCLUDE PRESSURE TREATED SOFTWOOD TRELLIS WORKS (1.80 X 1.80M) FIXED TO EXISTING WALLS OR FENCES.

D. MULCH.

FOLLOWING PLANTING SUPPLY & SPREAD 50MM OF ORNAMENTAL BARK MIXED CONIFER MULCH 30-50MM PARTICLE SIZE TO ALL PLANTED AREAS. FINISHED MULCH LEVELS SHALL BE NO HIGHER THAN 15MM BELOW GRASS OR PAVEMENT LEVELS TO AVOID ANY SPILLAGE ONTO PAVEMENTS OR LAWNS. GENERAL NOTES FOR THE DEVELOPER.

ALL SOIL LEVELS FOR SHRUB BEDS AND GRASS AREAS SHOULD HAVE ANY COMPACTED SUB-GRADE THOROUGHLY BROKEN UP BY MACHINE BEFORE INSTRUCTING THE GROUND WORKER TO SPREAD TOPSOIL OR THE LANDSCAPE CONTRACTOR TO COMMENCE WORK AS THE BEDS WILL BECOME WATERLOGGED IN WET WEATHER AND THE PLANTS AND TURF WILL DIE.

TOPSOIL.

TOPSOIL SPREAD FROM ON SITE SHOULD BE TO THE FOLLOWING DEPTHS: SHRUB BEDS - 450MM GRASS AREAS - 150MM TOPSOIL SHALL BE SPREAD FOR GRASS AREAS FLUSH WITH ANY AREA OF PAVING AND AFTER SETTLEMENT. THE SOIL LEVEL SHOULD BE NO GREATER THAN 10MM BELOW PAVED AREAS TO ALLOW FOR TURF.

C.D.M. REGULATIONS RISK ASSESSMENT.

IT IS THE DEVELOPERS RESPONSIBILITY TO DESIGN FOUNDATIONS TO ACCOMMODATE THE PROPOSED TREE AND SHRUB PLANTING. REFERENCE SHOULD BE MADE TO NHC STANDARDS VOLUME PARTS 4.2 AND 4.3 REGARDING TREES AND SHRUBS IN RELATION TO FOUNDATIONS.

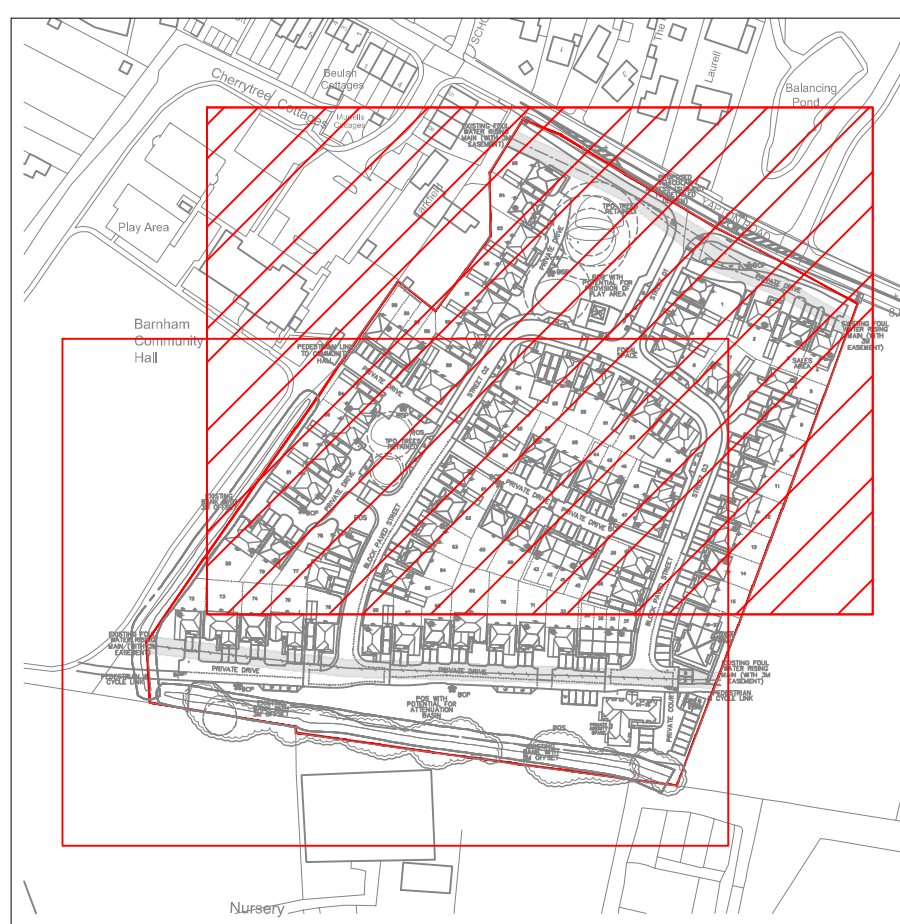
ALL BARE ROOT PLANTS TO HAVE RABBIT GUARDS

ALL TREES IN CLOSE PROXIMITY TO HARD SURFACES/ SERVICES AND FOOTPATHS ETC ARE TO HAVE GREEN LEAF EROOT600 ROOT BARRIERS OR SIMILAR APPROVED.

BIRD AND BAT BOXES TO BE LOCATED IN MATURE EXISTING TREES AT LEAST 5M ABOVE GROUND, OR AS DIRECTED BY AN ECOLOGIST. TYPE TO BE APPROVED.

NORTH IS ASSUMED

The approved details of the landscaping shall be carried out in the first planting and seeding season, following the occupation of the buildings or the completion of the development, whichever is the sooner, and any trees or plants which, within a period of five years from the completion of development, die, are removed or become seriously damaged or diseased, shall be replaced in the next planting season with others of similar size and species, unless the Local Planning Authority gives written consent to any variation.



Revision			
A	Scheme adjusted to new layout	AD	20.08.20
B	Scheme adjusted to new layout	AD	04.01.20