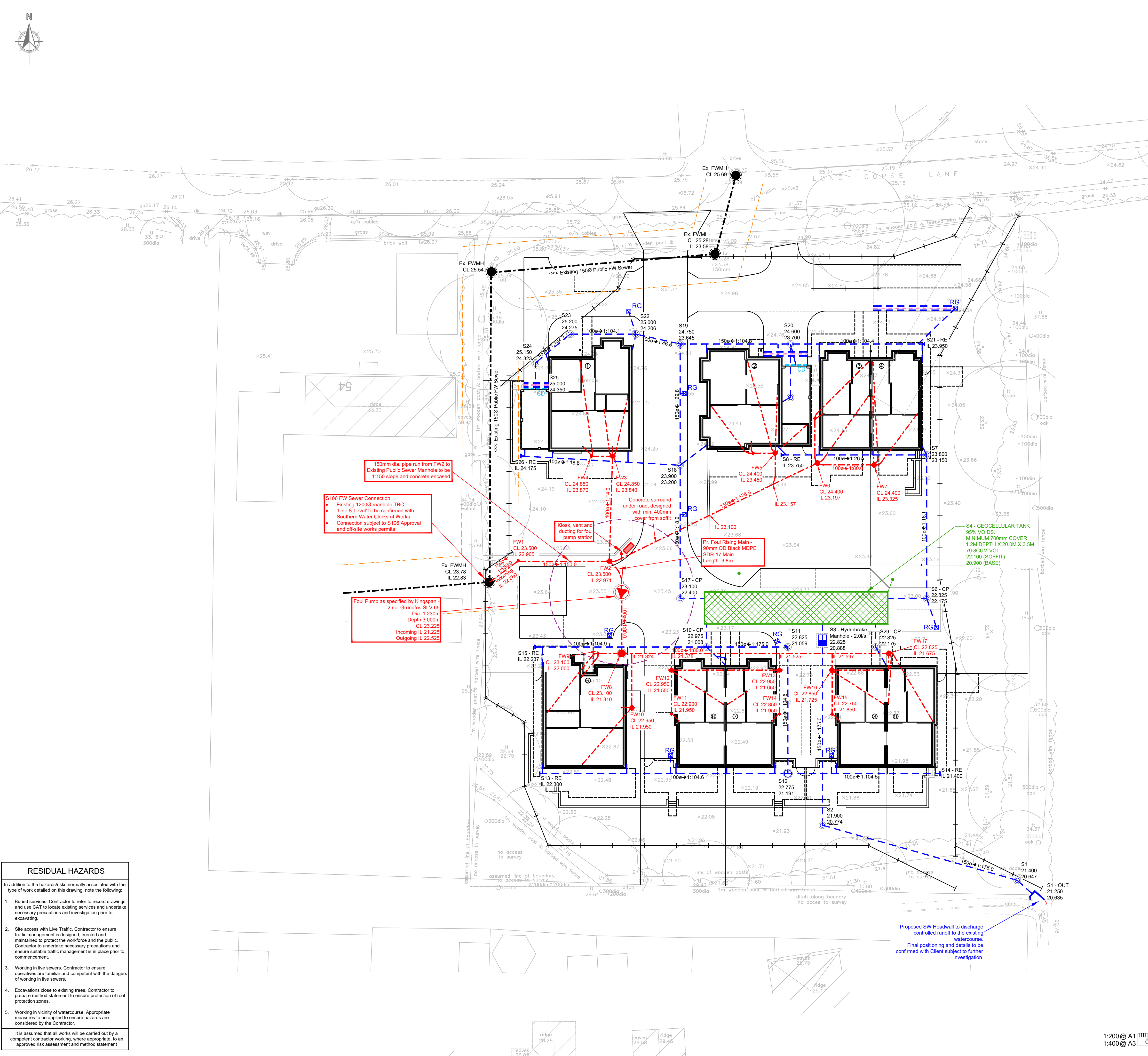




| RESIDUAL HAZARDS                                                                                                                                           |                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| In addition to the hazards/risks normally associated with the type of work detailed on this drawing, note the following:                                   |                                                                                                                                                                                                                                                                             |
| 1.                                                                                                                                                         | Buried services. Contractor to refer to record drawings and use CAT to locate existing services and undertake necessary precautions and investigation prior to excavating.                                                                                                  |
| 2.                                                                                                                                                         | Site access with Live Traffic. Contractor to ensure traffic management is designed, erected and maintained to protect the workforce and the public. Contractor to undertake necessary precautions and ensure suitable traffic management is in place prior to commencement. |
| 3.                                                                                                                                                         | Working in live sewers. Contractor to ensure operatives are familiar and competent with the dangers of working in live sewers.                                                                                                                                              |
| 4.                                                                                                                                                         | Excavations close to existing trees. Contractor to prepare method statement to ensure protection of root protection zones.                                                                                                                                                  |
| 5.                                                                                                                                                         | Working in vicinity of watercourse. Appropriate measures to be applied to ensure hazards are considered by the Contractor.                                                                                                                                                  |
| It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved risk assessment and method statement |                                                                                                                                                                                                                                                                             |

| -DRAINAGE KEY- |                                                                                                                      |
|----------------|----------------------------------------------------------------------------------------------------------------------|
|                | Proposed Surface Water Drain                                                                                         |
|                | Rodding Point (Below Ground)                                                                                         |
|                | Precast Concrete Ring Manhole (Over 1.5m Depth to Soffit, CP Denotes Catchpit)                                       |
|                | Precast Concrete Ring Flow Control Manhole (Refer to Construction Details)                                           |
|                | Inspection Chamber (Max 1.2m Depth to invert, CP Denotes Catchpit)                                                   |
|                | 450x950 Road Gully & 1500 Lateral (Double gullies must have separate laterals) Including Smart Sponge for pollutants |
|                | Storm Water Headwall                                                                                                 |
|                | Proposed Geocellular Tank TOTAL = 70m³                                                                               |
|                | Geocellular Tank Air Vent                                                                                            |
|                | Storm Water (Sub-base Drain/French Drain) 450 Wide x 450 Min Depth (Varies)                                          |
|                | Proposed SW Channel Drain (Aco-Drain or similar)                                                                     |
|                | Existing Foul Sewer/Drain                                                                                            |
|                | Public Foul Sewer Protected Strip                                                                                    |
|                | Proposed Foul Drain                                                                                                  |
|                | Inspection Chamber (Max 1.2m Depth to invert OR up to 3.0m with reduced entry shaft)                                 |
|                | Precast Concrete Ring Manhole (Over 1.5m Depth to Soffit)                                                            |
|                | Proposed Foul Pumping Station                                                                                        |
|                | STP Air Vent                                                                                                         |
|                | Proposed Water Butt, 210L size, inc base unit, to be installed on patio/path construction                            |
|                | 7.0m Foul Pumping Station habitable offset                                                                           |

| -SURFACE WATER STRATEGY-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <ul style="list-style-type: none"><li>Surface water disposal should be managed in view of the SuDS hierarchy;<ol style="list-style-type: none"><li>Infiltration</li><li>Watercourse</li><li>Public Surface Water Sewer(s)</li></ol></li><li>Site investigation by Geo-Environmental found underlying Clay Bedrock, and infiltration tests were both insufficiently quick and achieved insufficient fall in head to provide soakage rate. Thus it is deemed that infiltration is not viable at the site.</li><li>Surface water runoff will be captured and attenuated on site utilising a geocellular storage tank, and discharged to the boundary watercourse at a controlled flow rate of 2.0l/s.</li><li>Surface water runoff treatment will be achieved by the use of "smart sponge" within the road gullies, prior to attenuation in the storage tank.</li><li>The drainage network has been designed for 1-in-100 year storm events, with the allowance of 40% for climate change.</li><li>Exceedance in an extreme weather event would flow overland towards the watercourse, as currently occurs.</li></ul> |  |

| -FOUL WATER STRATEGY-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <ul style="list-style-type: none"><li>Foul water disposal should adhere to the following hierarchy;<ol style="list-style-type: none"><li>Public Sewer</li><li>Private Treatment Plant</li><li>Septic Tank and Drainage Field</li><li>Cesspool</li></ol></li><li>In accordance with the hierarchy, connection to the public sewer on site is proposed. A gravity connection is proposed, however part of the site will be internally pumped.</li><li>The proposed pump unit has been dictated by Kingspan and is provided separately.</li></ul> |  |

EXISTING DRAINAGE ON SITE HAS BEEN INVESTIGATED.

THE CONTRACTOR IS RESPONSIBLE FOR DEALING WITH THE EXISTING DRAINAGE INFRASTRUCTURE AND REPORTING CONNECTIVITY & CONDITION TO ENGINEER.

BUILDING FOUNDATION & MAIN SERVICE CORRIDOR 'LINE & LEVEL' SHALL BE DESIGNED TO SUIT THE DRAINAGE STRATEGY.

WATER BUTT LOCATIONS TO BE CONFIRMED BY CLIENT

| NOTES |                                                                                                                                                                                                                                                                                                                          |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.    | This drawing is to be read in conjunction with all other Bright Plan Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.                                                                               |
| 2.    | Bright Plan Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.                                                                                                                                                                  |
| 3.    | Do not scale, work to figured dimensions only. All dimensions are in millimeters unless noted otherwise and all levels are in metres from the topographic survey datum.                                                                                                                                                  |
| 4.    | Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works. |
| 5.    | All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.                                                                                                                          |
| 6.    | The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. Bright Plan Civils logo and company information must be removed from copies if information is re-used.                                                   |
| 7.    | The main contractor is responsible for the design of all temporary works, and is also responsible for the safe maintenance and stability of existing buildings at all times.                                                                                                                                             |
| 8.    | The main contractor is responsible for dealing with all occurrences of ground water during the construction period.                                                                                                                                                                                                      |
| 9.    | The contractor must comply with all current legislation relating to health & safety.                                                                                                                                                                                                                                     |
| 10.   | All products specified shall be installed in strict accordance with the manufacturers recommendations and instructions. If there are discrepancies between that information and the details on any BPC drawing, the manufacturers instructions must be used.                                                             |
| 11.   | Contractor to confirm all invert levels where connections are proposed prior to commencing any drainage works. Contractor to commence drainage works at the point of discharge.                                                                                                                                          |

| DRAINAGE NOTES |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.             | All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK), BS8301 & BSEN 752-1.                                                                                                                                                                                                                                                                                                                                   |
| 2.             | For location and setting out of building drainage points refer to architects drawings.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3.             | All pipe runs near buildings to comply with the Building Regulations 2002 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class gen3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class gen3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GMA concrete. |
| 4.             | Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).                                                                                                                                                                                                                                                                                                                                                                        |
| 5.             | Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.                                                                                                                                                                                                                                                                                                                                                                                                            |
| 6.             | In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided; compressible boards (fibreglass or polyethylene) shall be provided at a maximum of 8m centres (conforming with pipe joints), the boards shall be placed to pipe diameter and to a height and width equal to the concrete cross section, a board thickness of 18mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.                                                                         |
| 7.             | All private building drainage shall be constructed in strict accordance with BS EN 752-1. Foul drainage beneath the floor slab shall be laid, shall be laid no better than 1:45. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of 1:100 = 1 in 400 (1:100 = 1 in 80) for foul drains and 1 in 80 for surface water drains.                                                                                                             |
| 8.             | All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.                                                                                                                                                                                                                                                                                                                                                                                                          |
| 9.             | All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4680, BS4681/BS4682 and BS4683/BS4684 as appropriate and shall be laid in accordance with the manufacturer's specification.                                                                                                                                                                                                                                                                                                                       |
| 10.            | All pipes, bends and junction materials for adoptable drainage shall be verified clay, extra strength or super strength to BS EN 252, with flexible joints and kitemark certified.                                                                                                                                                                                                                                                                                                                                                          |
| 11.            | All back inlet gullies to be roddable or connected to inspection chambers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 12.            | All gully connections other than at manholes to be 'Y' junctions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 13.            | All road gully connections to be 150mm diameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 14.            | All sub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.                                                                                                                                                                                                                                                                                                                                                |
| 15.            | No low point shall be without a method of drainage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 16.            | All connections to be soffit to soffit unless otherwise noted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 17.            | All concrete and concrete products to be in accordance with BRE 363 for sulphates.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 18.            | The locations of all building drainage points shall be cross referenced against the architects drawings during setting out.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 19.            | Before connections are made to existing public sewers an application under 106 must be made to relevant sewerage undertaker.                                                                                                                                                                                                                                                                                                                                                                                                                |
| 20.            | The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.                                                                                                                                                                                                                                                                                                                               |
| 21.            | Existing drains - any existing drains to be abandoned to be decommissioned in view of building regulations by either building out, infilled or sealed.                                                                                                                                                                                                                                                                                                                                                                                      |
| 22.            | Should ground water be encountered on site during construction BPC shall be referred to determine if additional measures are required.                                                                                                                                                                                                                                                                                                                                                                                                      |
| 23.            | The drainage drainage system shall be fully cleaned on completion of the project using methods that ensure pollution off site does not occur.                                                                                                                                                                                                                                                                                                                                                                                               |
| 24.            | Any existing land drains severed during construction shall be reinstated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| FOR APPROVAL                                               |                              |            |
|------------------------------------------------------------|------------------------------|------------|
| C                                                          | Revised Drainage Runs        | 04/04/2022 |
| B                                                          | Revised Headwall Positioning | 14/03/2022 |
| A                                                          | Revised Issue                | 09/03/2022 |
| -                                                          | For Approval                 | 08/03/2022 |
| Rev.                                                       | Amendments                   | Date       |
|                                                            |                              |            |
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|                |                                           |            |          |
|----------------|-------------------------------------------|------------|----------|
| Drawing Status | FOR APPROVAL                              |            |          |
| Client         | Metis Homes Ltd                           |            |          |
| Project        | Land adj. Long Copse Lane Emsworth, Hants |            |          |
| Drawing Title  | Engineering Layout - Drainage Design      |            |          |
| Scale          | 1:200                                     | Date       | Apr 2022 |
|                |                                           | Drawn By   | DJL      |
|                |                                           | Checked By | MJA      |
| Drawing No.    | D2059-002                                 |            |          |
|                |                                           | Rev.       | C        |

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