



GENERAL

Do not scale from this drawing.

All dimensions are in millimetres unless noted otherwise.

All setting out to architects drawings.

Drawing to be read in conjunction with all other SEA drawings and architects drawings.

This scheme has been designed using the survey information provided by others. It shall be the responsibility of the contractor to verify levels, boundaries etc prior to commencing any works on site. SEA Structural Engineers Ltd. shall not accept any responsibility for errors resulting from the survey.

All setting to be in accordance with the Architect's drawings, the Contractor is to check all dimensions and levels prior to commencement of work and report any discrepancies to the Engineer, including any encountered during construction works.

All dimensions should be checked on site prior to construction. Please notify the Engineer of any discrepancies before commencing or continuing any work.

HEALTH, SAFETY & THE ENVIRONMENT

In accordance with the Health and Safety at Work etc Act 1973 and the Construction (Design and Management) Regulations 2015, designs and details on this drawing have been the subject of a Designers Risk Assessment, to identify risks in construction, use, or demolition of the scheme.

It is not considered necessary for Designers to highlight obvious and/or common risks (such as deep excavations, manual handling and working around heavy plant) which Contractors should be familiar with.

So far as is reasonably practicable, risks inherent in the design have been eliminated. Where it has been considered that elimination of a risk (or part of a risk) is not reasonably practicable, it has been reduced.

Significant unusual residual risks are identified below, beside the measures which have been adopted to eliminate and/or reduce them:

None identified.

DRAINAGE NOTES

All pipe lengths and gradients are based on centre of manhole to centre of manhole.

The exact position, level, size and use of existing sewers to be confirmed on site and reported to the Engineer prior to the commencement of works.

All pipes are to be laid with level soffits or as indicated.

All private drainage works to accord with the requirements of Building Regulations 2000, Part H (drainage and waste disposal).

The invert of each horizontal drain at the base of a stack shall be at least 450mm below the center line of the lowest branch pipe. Set the level to ensure at least 50mm clearance to footings.

All pipes to be bedded and backfilled in accordance with Part H, diagram 10. Shallow pipes shall be protected in accordance with Part H, diagram 11.

Unless otherwise stated, all private drainage to be 100mm diameter. Gradients have been shown where there are pipe capacity issues, however minimum gradients are as below:

- Surface water 100mm diameter pipes shall not be laid flatter than 1 in 100
- Surface water 150mm diameter pipes shall not be laid flatter than 1 in 150
- Foul water 100mm diameter pipes shall not be laid flatter than 1 in 40 unless there is a WC connected upstream at which it can be laid at 1 in 80
- Foul water 150mm diameter pipes shall not be laid flatter than 1 in 150 providing there are minimum of 5 WCs connected.

Pipes which run adjacent to buildings shall be installed in strict accordance with Part h, clauses 2.23 to 2.25 and diagram 8.

All private manholes and inspection chambers subject to vehicular loading must have class D400 covers and frames in accordance with BS EN 124:2015. All private manholes and inspection chambers not subject to vehicular loading must have class A15 covers and frames in accordance with BS EN 124:2015.

All drains near existing or proposed trees shall be constructed in accordance with the requirements of NHBC's practice note 3 'building near trees'.

Excavation of drain trenches must not be lower than the foundation of any nearby buildings. If the trench is within 1m of foundations, the trench needs to be filled with concrete up to the lowest level of the foundation. If the trench is further than 1m away from the foundations, the trench needs to be filled with concrete to a level below the lowest level for the building, equal to the distance from the building, less than 150mm.

An opening needs to be formed where a pipe passes through a wall, with a minimum 50mm clearance. A lintel must support the brickwork above and each side of the opening masked with rigid sheet material.

All pipework with less than 1.2m cover shall have a concrete slab to adopting water company's requirements unless in open space where 0.9m cover is acceptable. Where a pipe requires a concrete surround C20 concrete mix should be used with vertical joints formed at the face of each flexible joint using 18mm thick compressible board.

All UPVC pipes with less than 600mm cover need concrete protection. Where two pipes cross with less than 300mm separation, surround each with a C20 concrete mix. Where centered on the crossing point, extend the concrete surrounds as necessary to within 150mm of the next nearest flexible joint.

Adequate surface water drainage systems shall be provided to prevent unregulated discharge of water from a private drive onto the highway. These measures shall be implemented before the development in brought into use.

Perforated pipework to be used for distributor runs within permeable block paved areas.

Trapped road gullies to be used for all gullies designed within he access road

DRAWING KEY:

- Proposed storm drainage
- Proposed storm 450/600mmØ PPIC
- Proposed extent of porous paving - provided with a 425mm deep permeable subbase
- Proposed foul drainage
- Proposed foul 450mmØ PPIC

STORM DRAINAGE DESIGN STATEMENT

In accordance with the storm drainage hierarchy we have considered use of infiltration techniques, outfall to watercourse and finally outfall to sewers, each presented below;

Outfall to ground (infiltration)

The ground investigation carried out by Ground Engineering determined that the soils underlying the site comprise Fenland Formation. Soakaway testing was carried within the peat layer of the Fenland Formation and shows the this layer is pervious. However perched ground water encountered and the layer is discontinuous. The report concludes that the use of soakaways is unlikely to be viable.

Outfall to watercourse

There is a existing water course located north east of the site, adjacent to Campaigns Lane, proposals are to outfall via this water course.

Outfall to Sewers

There are no pubic surface water sewers within the vicinity of the site.

Design Criteria

The drained area for the proposed development is 450m². This drained area has been used in the storm water calculations.

Based on the above drained area a greenfield runoff rate has been calculated using the SUDS UK online tool. Qbar for has been calculated as 0.06l/s. Flow less than 2l/s are not considered practical due to the risk of blockage and maintenance. Therefore the drainage from the development shall be restricted to 2l/s

Causeway flow has been used to model the storm drainage for the development and has been designed for all storm event up to and including the 1in100 year storm event plus a 40% allowance for climate change. Calculations shows that no flooding will occur in this storm event. Attenuation will be provided using the subbase of the permeable paving as indicated on the adjacent plan

Water Quality

The use of SUDS has been considered and the drive will utilise permeable block paving which will adequately provide the required water treatment for the development in accordance with the SUDS manual.

Proposed cesspool for each units providing a minimum 25m³ of storage in accordance with Part H volume based on a maximum of 3 occupants per dwelling. Depth below incoming IL = 2.0m Plan area = 12.5m² Refer to notes for full specification.

CESSPOOL NOTES

The cesspool shall be proprietary and designed by supplier.

The cesspool shall have no opening except for the inlet, access for emptying and ventilation.

The cesspool shall prevent leakage of contents and ingress of subsoil water and shall be ventilated.

The cesspool shall be provided with access for emptying and cleaning. Access covers shall be of durable quality having regard for the corrosive nature of the tanks contents. the access should be lockable or otherwise engineered to prevent personnel entry.

Factory-made cesspool are available in glass reinforced plastics, polyethylene or steel and should meet the relevant requirements of BE EN 12566-1. Particular care to be taken to ensure stability of the tanks.

The cesspool may be constructed in brickwork or concrete, roofed with heavy duty concrete slabs. Brickworks should be of engineering bricks and be at least 220mm thick. the mortar should be a mix of 1:3 cement-sand ratio. Instu concrete should be at least 150mm thick of C/S/P mix (BS 5328)

The inlet of the cesspool shall be provided with access for inspection.

A notice should be affixed within the building to say the property is drained via a cesspool and it should also include requirements for maintenance.

Rev.	Date	By	Description
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PROJECT RESIDENTIAL DEVELOPMENT CAMPAIGNS LANE DEEPING ST NICHOLAS			
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