



The Rose, 63 The Street

Foul Drainage Strategy

Job Number: 1392

Date	Version	Notes/Amendments
September 2023	1	Issued for Information
November 2023	2	An Executive Summary was added
December 2023	3	Adjusted in accordance with updated plans

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Acronyms	
AOD	Above Ordnance Datum
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
SuDS	Sustainable Drainage Systems

Executive Summary

Flume Consulting Engineers conducted a review of the foul drainage strategy for the proposed development at The Rose, Kirby-le-Soken, with a particular focus on assessing suitable foul drainage solutions in line with local and national guidelines.

Constraints for Foul Drainage and adherence to Foul Drainage Hierarchy

- The established hierarchy prefers a public sewer connection; however, a connection to this sewer is not feasible, primarily due to its shallow depth. Other alternative solutions were explored, but also found to be unsuitable due to the site-specific characteristics.

Foul Water Drainage Options	Achievability
Connection to a public sewer	No
A septic tank which discharges to a soakaway (drainage field)	No
A sewage treatment plant discharging to a soakaway (drainage field)	No
A sewage treatment plant discharging to a watercourse	No
A cesspool	Yes

Cesspool as the Selected Solution

- A cesspool is determined to be the most appropriate foul drainage strategy given the site's constraints.
- The choice is in line with the existing strategy for the site and fulfils the conditions of the foul drainage hierarchy.

Maintenance and Regulatory Compliance

- The cesspool will be managed with a scheduled waste removal plan executed by certified specialists.
- An alarm system will be installed to monitor cesspool levels and prevent overflows.
- The cesspool's capacity will be tailored to the user count, ensuring environmental standards are upheld.

Conclusion

- The cesspool system is the designated foul drainage method for The Rose due to site limitations.
- A comprehensive maintenance regimen will support the system, complying with environmental guidelines.

Introduction

Flume Consulting Engineers have been appointed to undertake a review of the Foul Drainage Strategy for the proposed development at The Rose, 63 The Street, Kirby-le-Soken, Frinton-on-Sea, Essex CO13 0EG.

This report has been carried out in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change' (PPG). This report also incorporates advice and guidance from the Environment Agency (EA), Building Regulations Part H and CIRIA documents.

As part of the planning submission, the local flood authority has requested a foul drainage assessment be submitted in line with their recent comments. This report and the accompanying information are provided to offer supportive details on how the development aligns with local and national policies where applicable.

Site Description and Location

The site is located to the south of The Street, approximately 1.0km from Kirby-le-Soken.

The site postcode is CO13 0EG and the OS grid reference is TM 21493 22208.

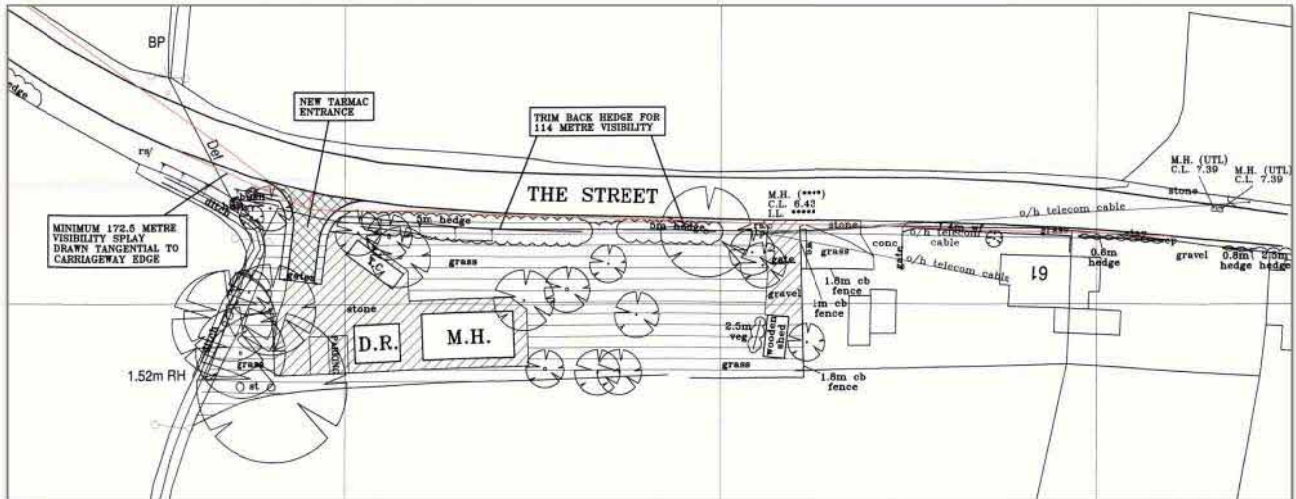


FIGURE 1. SITE LOCATION

Development Proposal

It is proposed to provide an extension to the existing pitches to create 4 mobile units. The site has previous approval for a gypsy/traveller site in 2013 and later extended to include 2 mobile homes and 1 touring caravan.

The application site is located on the southern side of The Street. The proposed site will be accessed via the existing permitted access. Pedestrian access will be maintained and remain unchanged from the existing case.

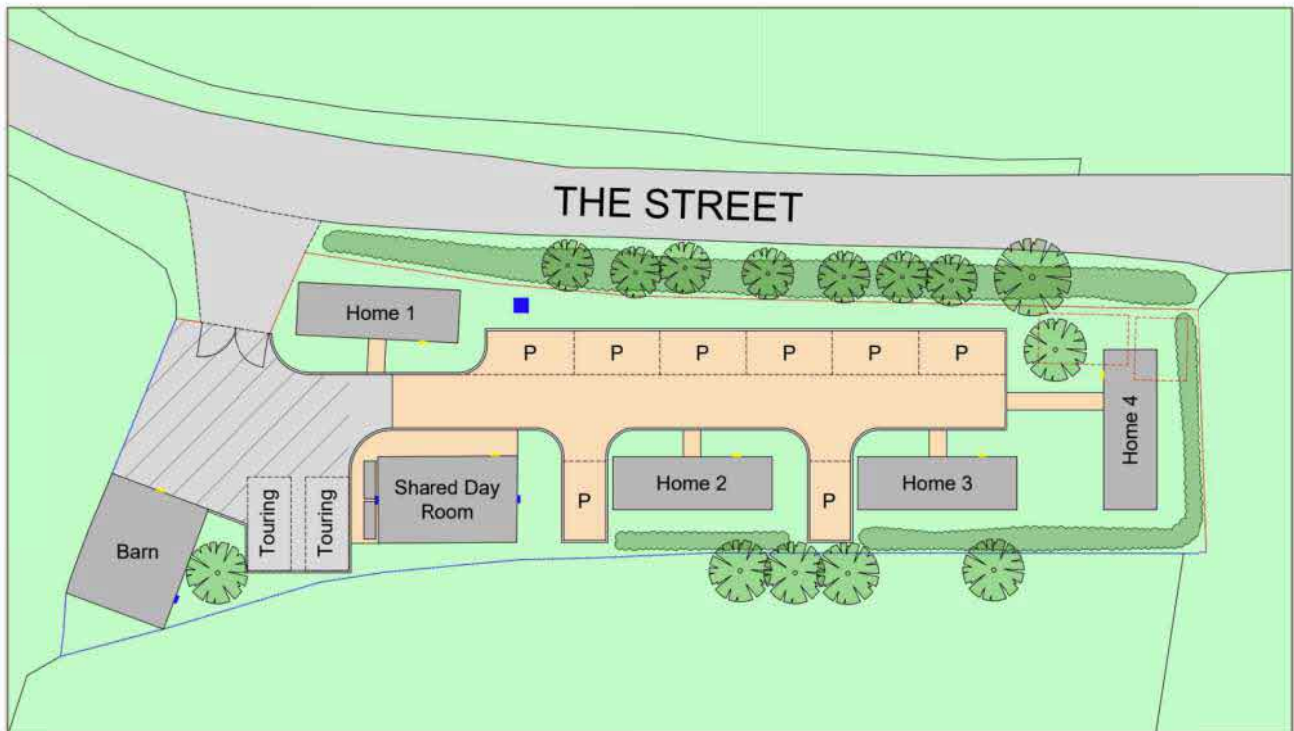


FIGURE 2. PROPOSED SITE PLAN

Flood Risk

The EA's indicative floodplain map shows that the site is located in Flood Zone 1 (Low risk). Land within flood zone 1 has a low probability of flooding from rivers and the sea, and is assessed as having annual probability of river flooding less than 0.1% (Figure 3).

Developments in this flood zone do not have any restrictions, provided they do not increase the risk of flooding elsewhere.



FIGURE 3. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2023)

Foul Drainage Scheme

In compliance with Building Regulations Approved Document H, foul water drainage must be designed as follows:

‘An adequate system of drainage shall be provided to carry foul water from appliances within the building to one of the following, listed in the order of priority:

- a) a public sewer; or, where that is not reasonably practicable,*
- b) a private sewer communicating with a public sewer; or, where that is not reasonably practicable,*
- c) either a septic tank which has an appropriate form of secondary treatment or another wastewater treatment system; or, where that is not reasonably practicable,*
- d) a cesspool.’*

This report also considers the Tendring District Council’s Policy PPL5 of the Local Plan which states *“Private sewage treatment facilities will not be permitted if there is an accessible public fowl sewer. Where private sewage treatment facilities are the only practical option for sewage disposal, they will only be permitted where there would be no harm to the environment, having regard to preventing pollution of groundwater and any watercourses and odour”*.

Further information is provided in the relevant chapters below.

The foul drainage strategy is shown in Figure 4 and supplementary documents provided in Appendix A.

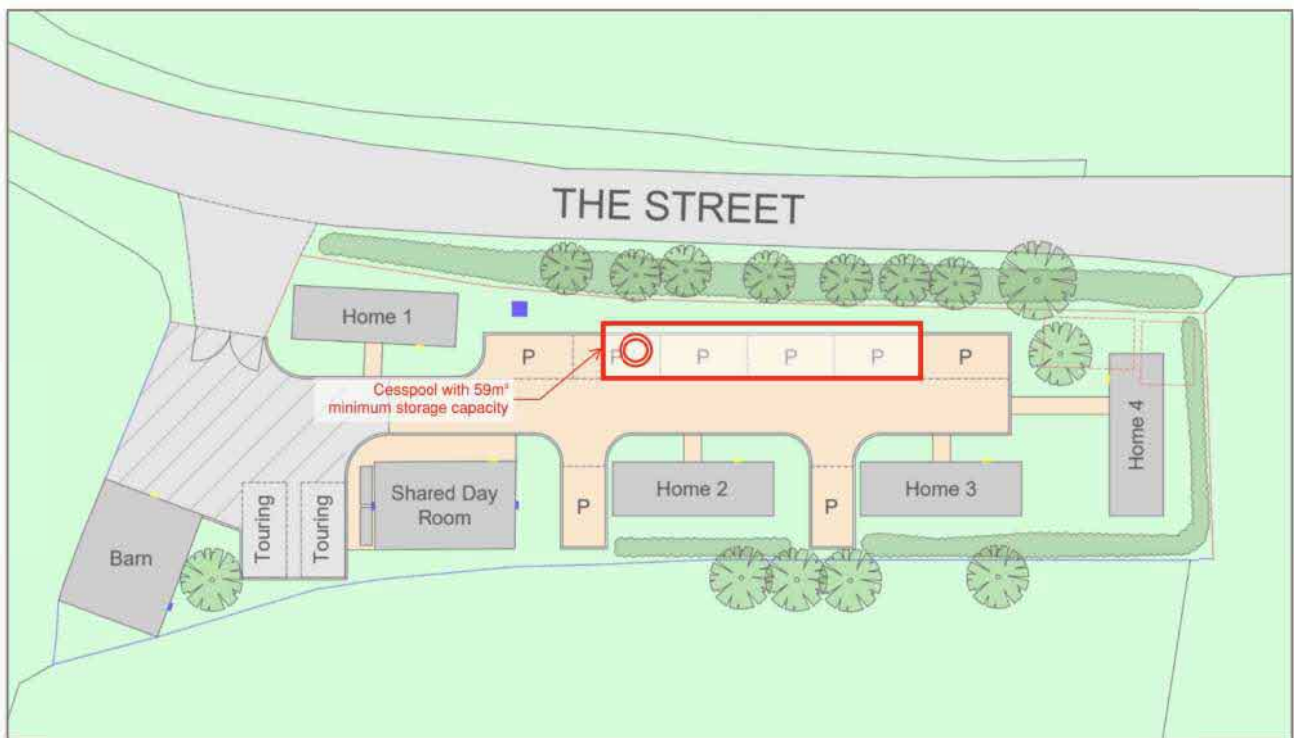


FIGURE 4. FOUL DRAINAGE STRATEGY

Existing Public Sewers

LIT 5697 - Foul Drainage Assessment Form states “Where the distance from a site to the closest point of connection to the foul sewer is less than the number of properties that are proposed to be built on that site multiplied by 30m an Environmental Permit will be required and an applicant will need to demonstrate as part of any application for such a permit why connection to the public foul sewer is not feasible”. Given the number of mobile homes now proposed is four, this then should be more than 120m from the edge of the development.

The information provided in Figure 5 from *Anglian Water Sewer Records* indicates that there is a small 150mm diameter foul water public sewer approximately 80m from the north western corner of the site. Connecting to this sewer is not feasible, primarily due to its shallow depth, and for several other reasons discussed in the upcoming chapter.

Various alternative options will be explored and discussed in the relevant chapters below.

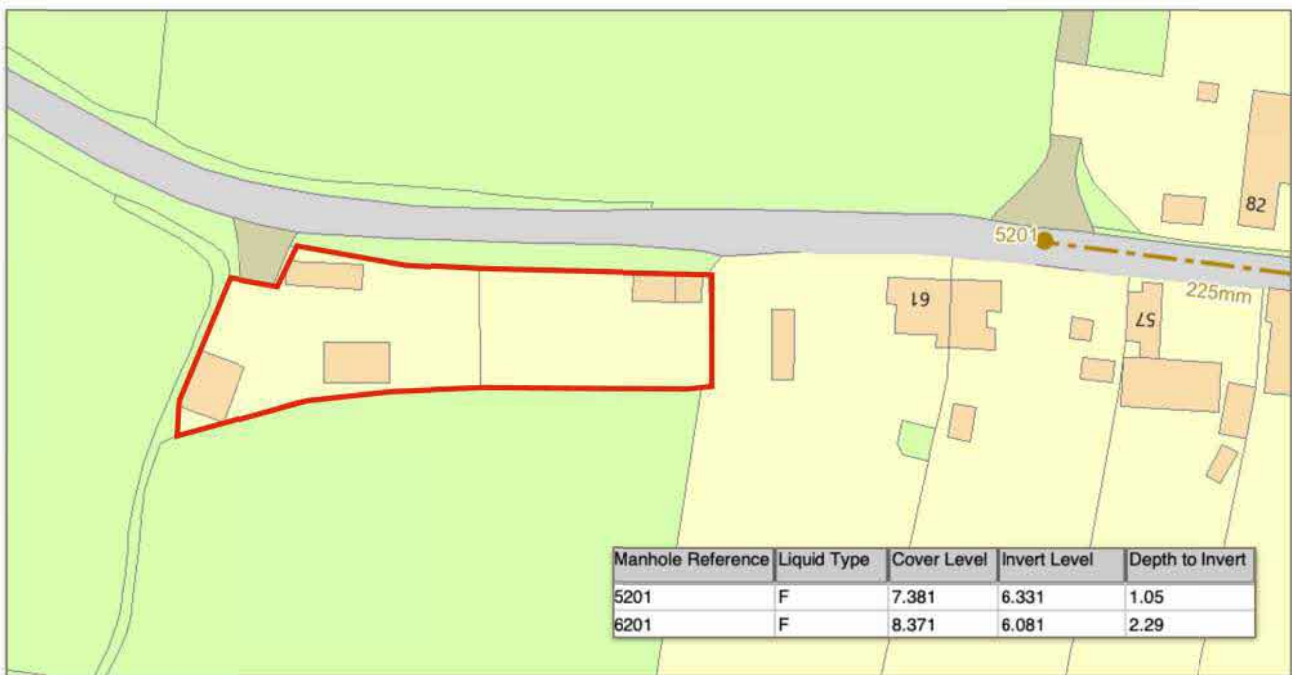


FIGURE 5. ASSET LOCATION SEARCH (ANGLIAN WATER, 2023)

Foul Water Drainage

In compliance with Building Regulations Approved Document H, foul water drainage must be designed in accordance with a drainage hierarchy. The hierarchy is listed below in order of priority and considered based on the site-specific constraints.

a) a public sewer X

In accordance with the foul water drainage hierarchy, the preferred option would be to seek a viable connection to the public foul water sewer. However, while there is a foul water public sewer located approximately 80 meters from the site boundary on The Street, connecting to this sewer is not feasible, primarily due to its shallow depth.

The site's lower elevation with ground levels on site approximately 6.430m AOD (Figure 1) and the invert levels in the public sewer at 6.331m AOD (Figure 5), connecting the site's foul water drainage to the foul water public sewer via a gravity connection is not feasible. A minimum 1.20m deep demarcation chamber (in accordance with Design and Construction Guidance for Public Sewers) would mean the levels would be 1.101m below the public sewer without considering the necessary falls to achieve minimum self-cleansing flows.

In any case, the existing foul water public sewer is expected to have limited capacity due to the size of the pipework, and the connection would be at the head of the sewer. This means that even if a gravity connection were possible, the public sewer may not be able to accommodate the additional sewage flow from the site without risking overload and potential sewage backups.

b) a private sewer communicating with a public sewer X

There are no private sewers either within the site domain or in close proximity to the development site.

c) either a septic tank which has an appropriate form of secondary treatment or another wastewater treatment system X

Septic Tanks - discharging to the nearby watercourse

The General Binding Rules for Small Sewage Discharges state that septic tanks should only discharge to a drainage field, and that discharges to a watercourse or ditch are no longer allowed. This is because a septic tank provides very little treatment of the waste, and it is no longer considered safe to allow this waste to leave the septic tank and enter into watercourses without some form of further treatment - which can best be provided by a drainage field.

Septic Tanks - infiltrating to ground (i.e a drainage field)

The drainage field should:

- No part of the drainage field should be within 2 metres of a neighbouring boundary.
- be at least 10 metres from a watercourse.
- be at least 15 metres from any building.

- be at least 50 metres from a water supply (e.g. well).
- not be near any access roads, driveways or paved areas.

Due to the specific easement requirements outlined above, such as minimum distances from watercourses, buildings, boundary edges, and the proximity to the road and paved areas, the implementation of drainage fields is not feasible in this case.

Packaged Treatment Plant - discharging to the nearby watercourse

Sewage treatment is an ongoing process, requiring active micro-organisms for effective functioning. However, the intermittent and insufficient continuous flows resulting from the nature and usage patterns of the site make it unfeasible to sustain the biological processes in the sewage treatment tanks. Consequently, considering the nomadic use of the site, it is advisable for foul water to discharge into cesspits or cesspools, aligning with the approach commonly adopted at other gypsy traveller sites, and with the existing approved foul drainage solution for the site. This has also been validated by the manufacturers of Packaged Treatment Plants which can be seen in Appendix D.

Packaged Treatment Plant - infiltrating to ground (i.e a drainage field)

As outlined previously, drainage fields are not possible due to the required minimum easements from a watercourse, buildings, boundary edges, and proximity to the proposed private road network. Additionally, it must be sufficiently distant from any other infiltration system, including roof water, which further restricts their use in this instance.

Furthermore, the site resides within an SSSI Impact Risk Zone, as indicated in Figure 6. It's important to note in accordance with the Environment Agency's General Binding Rules, particularly Rule 17, that even if treatment plants were possible or considered viable, a permit from the Environment Agency would be required for any discharges to the ground or surface water bodies such as a beck or stream.



Site Check Results	
Site Check Report Report generated on Tue Nov 14 2023 You selected the location: Centroid Grid Ref: TM21492220 The following features have been found in your search area:	
SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)	
You selected the location: Centroid Grid Ref: TM21492220 The following features have been found in your search area:	
Combustion	General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.
Discharges	Any discharge of water or liquid waste of more than 2m ³ /day to ground (ie to seep away) or to surface water, such as a beck or stream.
Water Supply	Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m ² or any development needing its own water supply .
Notes 1	Strategic solutions for recreational impacts are in place. Please contact your Local Planning Authority as they have the information to advise on specific requirements.

FIGURE 6. SSSI IMPACT RISK ZONES - TO ASSESS PLANNING APPLICATIONS FOR LIKELY IMPACTS ON SSSIS/SACs/SPAs & RAMSAR SITES (ENGLAND)

d) a cesspool ✓

A cesspool offers a reliable solution, particularly for locations without access to mains drainage or where treated effluent discharge is not permissible due to unfavourable ground conditions. This is especially relevant in cases of infrequent or seasonal use, such as holiday homes or traveller sites, which can hinder the effective operation of a foul water treatment plant. Cesspools function as storage facilities, requiring periodic emptying by a tanker. Installing a high-level alarm is recommended to promptly alert residents of the need to empty the tank. For a single dwelling 18180 litres (4000 gallons) is the minimum allowable capacity. This capacity is suitable for two residents, which provides approximately 45 days of storage. This size should be increased by 6800 litres (6.8m³) for each additional user (estimated minimum 6). Based on the number of users, the estimated required storage capacity is 59m³ for this site. Any adjustment to this figure should be discussed with building control and in leasing with the site users to ensure proper and consistent maintenance in line with the recommendations from the manufacturer and in accordance with the management and maintenance schedule.

Foul Drainage Summary

Options	Achievability
Connection to a public sewer	No
A septic tank which discharges to a soakaway (drainage field)	No
A sewage treatment plant discharging to a soakaway (drainage field)	No
A sewage treatment plant discharging to a watercourse	No
A cesspool	Yes

Management and Maintenance Schedule

1. Waste Removal by Certified Specialists:

- Engage certified waste management specialists or reputable companies experienced in cesspool waste removal.
- Ensure compliance with waste disposal regulations and environmentally responsible practices.

2. Regular Scheduled Waste Removal:

- Establish a routine waste removal schedule based on recommended intervals and the cesspool's capacity.
- Coordinate with the waste management specialists to adhere to the schedule and maintain an efficient waste removal process.

3. Alarm-Triggered Waste Removal:

- Install an alarm system connected to the cesspool to provide timely notifications when waste levels approach a critical point.
- Train personnel to respond promptly to alarm alerts, initiating waste removal as necessary to prevent overflows and system complications.

4. Coordination and Communication:

- Maintain open communication with waste management specialists to ensure timely and coordinated waste removal activities.
- Foster a proactive relationship to promptly address any issues or concerns related to the cesspool's functionality and waste management.

5. Documentation and Compliance:

- Maintain comprehensive records of waste removal activities, including dates, quantities removed, and disposal locations.
- Ensure compliance with local regulations and guidelines regarding waste management, reporting, and documentation.

6. Periodic Cesspool Inspection:

- Conduct regular inspections of the cesspool and associated systems to identify potential issues early on.
- Document inspection findings and implement necessary maintenance and repairs to ensure the longevity and effectiveness of the foul drainage system.

Conclusions

The site resides in Flood Zone 1 where there is less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Developments in this flood zone have no restrictions other than ensuring surface water drainage proposals do not increase the flood risk on site and the surrounding areas.

Due to the constraints on site, the existing approved scheme discharges foul water drainage on site into a cesspool. The drainage proposals are to retain this drainage philosophy and the proposed development will discharge to a new upgraded cesspool which will be constructed in accordance with national and local regulations and maintained in perpetuity by the applicant in accordance with the management and maintenance schedule within this report and in line with manufacturers recommendations. This is in line with the foul drainage hierarchy noted in Building Regulations Part H, and national and local policies. This method has also been validated by the manufacturers, taking into account the specific type of use anticipated for the site.

Note:

This report has been prepared for the purposes of submitting to the local planning authority for review in relation to the associated below ground drainage strategy for the proposed development, and uses the most up-to-date information available to us at the time. It should not be relied upon by anyone else or used for any other purpose. This report is confidential to our Client; it should only be shown to others with their permission. We retain copyright of this report which should only be reproduced with our permission.

	Prepared By	Checked By	Approved for issue
Name	Tom Quigg BSc MSc CEng MICE	Magaly Sedeño BA	Tom Quigg BSc MSc CEng MICE
Signature	TQ	MST	TQ
Date	15 December 2023	15 December 2023	15 December 2023

Appendix A: Sewer Records



(c) Crown copyright and database rights 2023 Ordnance Survey 100022432

Date: 04/09/23

Scale: 1:1250

Map Centre: 621479,222211

Data updated: 31/07/23

Our Ref: 1263317 - 1

Wastewater Plan A3

This plan is provided by Anglian Water pursuant its obligations under the Water Industry Act 1991 sections 198 or 199. It must be used in conjunction with any search results attached. The information on this plan is based on data currently recorded but position must be regarded as approximate. Service pipes, private sewers and drains are generally not shown. Users of this map are strongly advised to commission their own survey of the area shown on the plan before carrying out any works. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or inaccuracy or omission, including the failure to accurately record, or record at all, the location of any water main, discharge pipe, sewer or disposal main or any item of apparatus. This information is valid for the date printed. This plan is produced by Anglian Water Services Limited (c) Crown copyright and database rights 2023 Ordnance Survey 100022432. This map is to be used for the purposes of viewing the location of Anglian Water plant only. Any other uses of the map data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.

Foul Sewer				Outfall*		Sewage Treatment Works	
Surface Sewer						Public Pumping Station	
Combined Sewer				Inlet*		Decommissioned Pumping Station	
Final Effluent							
Rising Main*				Manhole*			
Private Sewer*							
Decommissioned Sewer*							

*(Colour denotes effluent type)

accounts@flumeconsultants.com
The Rose



Appendix B: Foul Drainage Assessment Form

Foul Drainage Assessment Form (FDA)

Please note: You should only use this form for planning related queries. You cannot use it to apply for an Environmental Permit but you may submit a copy of the information you have provided for planning purposes in support of your Environmental Permit application. Further information on [how to apply for an environmental permit](#) and [general binding rules applicable to small discharges of domestic sewage effluent](#) is available on the gov.uk website.

APPLICANT DETAILS	
Name	PATRICK DELANEY
Address	63 THE STREET, KIRBY LE SOKEN ESSEX CO13 0EG
Telephone No	[REDACTED] (Agent acting on client's behalf)
e-mail	[REDACTED]

We will use the information you provide on this form to establish whether non-mains drainage, either a new system or connection to an existing system, would be acceptable. It is important that you provide full and accurate information. Failure to do this will delay the processing of your application.

You must provide evidence that a connection to the public sewer is not feasible.

Other than in very exceptional circumstances, we will not allow the use of non-mains drainage as part of your Planning or Building Regulation application unless you can prove that a connection to the public sewer is not feasible. We do not consider non-mains drainage systems to be environmentally acceptable in locations where it is feasible to connect to a public sewer. Please note that a lack of capacity in, or other operating problems with, the public sewer are not valid reasons to use a non-mains drainage system where it is otherwise feasible to connect to a public sewer.

Where connection to the public sewer is feasible, you may need to get the agreement of either the owners of any land through which the drainage will run or, if you intend to connect via an existing private drain, the owner of that private drain.

The National Planning Practice Guidance and [Building Regulations Approved Document H](#) give a hierarchy of drainage options that must be considered and discounted in the following order:

- 1 Connection to the public sewer
- 2 Package sewage treatment plant (which can be offered to the Sewerage Undertaker for adoption)
- 3 Septic Tank
- 4 If none of the above are feasible a cesspool

You must respond to all the following questions. If you wish to submit additional information please do so, marked clearly "Additional Information". In some cases you will be required to provide further information in order to demonstrate that any non-mains foul drainage system proposed is acceptable.

Feasibility of mains foul sewer connection	YES	NO
Have you provided a written explanation of why it is not feasible to connect to the public foul sewer with this form? <i>This must include a scaled map showing the nearest public foul sewer connection point - check with your local sewerage undertaker.</i>	✓	
Is the distance from your site to the closest connection point to the public foul sewer less than the number of properties to be built on the site multiplied by 30m? (see Guidance Note 2)	✓	
Does your proposal form part of a phased development or planned development of a wider area? <i>If YES, please provide further details including references of any planning permissions already granted.</i>		✓

Non-mains connection

Please provide a plan with dimensions that clearly shows the location of the whole system in relation to the proposed development and the position of the key elements e.g. septic tank, drainage fields and points of discharge.

1. Existing system	YES	NO
Do you intend to use an existing non-mains foul drainage system?	✓	
If YES, does the system already have an Environmental Permit issued by the Environment Agency? (In the case of a cesspool write N/A)		N/A
If YES, please provide Environmental Permit reference number.....		N/A

2. Discharge	YES	NO
Do you propose to use a package treatment plant?		✓
Do you propose to use a septic tank?		✓
Do you propose to use a cesspool? If YES go to Q4	✓	
Have you considered having your system adopted by the sewerage undertaker? (see Guidance Note 7).		
Will all, or any part of, the discharge go to a drainage field or soakaway? (see Guidance Note 3) - this includes systems that combine a drainage field with a high level overflow to watercourse If YES go to Q3.		
Do you intend to use a system that discharges solely to watercourse? (see Guidance Note 3) If YES go to Q9.		

3. Water abstraction	YES	NO
Do you receive your water from the public mains supply?		
If not, where do you get your water supply from?		

4. Cesspools (For methods other than cesspools write N/A)	YES	NO
Have you provided written justification for the use of a cesspool in preference to more sustainable methods of foul drainage disposal? (see Guidance Note 4)	✓	

5. Drainage field design (For cesspools write N/A)	YES	NO
Will the system discharge to a drainage field designed and constructed in accordance with British Standard BS6297:2007?		N/A
If not, why not?		
Will the discharge from the system be located in a Source Protection Zone 1 (SPZ1)?		N/A

6. Ground Conditions (For cesspools write N/A)	YES	NO
6a. Have you submitted a copy of the percolation test results with this form (see Guidance Note 6)?		N/A
6b. If NO please explain the justification for not undertaking or submitting these tests.		
6c. Is any part of the system in land which is marshy, water logged or subject to flooding?		N/A
6d. Will the soakaway be located on artificially raised, made-up ground or ground likely to be contaminated? If YES please provide details as additional information.		N/A
6e. Have you submitted the results of a trial hole at the site to establish that the proposed drainage field will be above any standing groundwater (see Guidance Note 6)?		N/A

7. Available Land	YES	NO
Is the application site plus any available area for a soakaway less than 0.025 hectares (250m ²)?	✓	

8. Siting of drainage field/soakaway discharge from a septic tank or package treatment plant or other secondary treatment. <u>N/A</u> You may need to make local enquiries to get a full answer to these questions.	YES	NO
Will it be at least 10m from a watercourse, permeable drain or land drain?		N/A
Will it be at least 50m from any point of abstraction from the ground for a drinking water supply (e.g. well, borehole or spring)? This includes your own or a neighbour's supply.		N/A
Will the discharge be within a groundwater Source Protection Zone 1? If yes, you will need to apply for an environmental permit		N/A
Are there any drainage fields/soakaways within 50m? This includes any foul drainage discharge system (other than the subject of this application) or surface water soakaway on either your own or a neighbour's property.		N/A
Will it be at least 15m from any building?		N/A
Will there be any water supply pipes or underground services within the disposal system, other than those required by the system? (For cesspools write N/A)		N/A
Will there be any access roads, driveways or paved areas within the disposal area? (For cesspools write N/A)		N/A

9. Siting of treatment plant, septic tank or cesspool	YES	NO
Is it at least 7m from the habitable part of a building?	✓	
Will there be vehicular access for emptying within 30m?	✓	
Can the plant, tank or cesspool be maintained or emptied without the contents being taken through a dwelling or place of work?	✓	

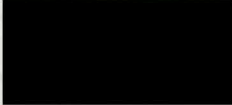
10. Expected flow	YES	NO
Please estimate the total flow in litres per day (see Guidance Note 5).		1500

11. General Binding Rules for Small Sewage Discharges	YES	NO
Does the system meet the requirements of the General Binding Rules for small sewage discharges?	✓	

12. Maintenance
How do you propose to maintain the system? 1. Regular emptying at defined intervals; 2. Utilise an alarm system to notify users when the cesspool reaches a critical level; 3. Ensure certified waste management specialist is appointed with expertise in cesspool waste removal.

13. Declaration

I declare that the above information is factually correct.

Name	Signature	Date
T. Quibr (on BEHALF OF CLIENT)		64 / 10 / 2023.

GUIDANCE NOTES:

- 1) This form is for use with the [National Planning Practice Guidance](#), [British Standard BS6297:2007](#) and [Building Regulations Approved Document H](#). It is intended to help Local Planning Authorities establish basic information about your non-mains drainage system and decide whether you need to submit a more detailed site assessment. If a detailed site assessment is requested but not submitted, your planning application might be refused.
- 2) Where the distance from a site to the closest point of connection to the foul sewer is less than the number of properties that are proposed to be built on that site multiplied by 30m an Environmental Permit will be required and an applicant will need to demonstrate as part of any application for such a permit why connection to the public foul sewer is not feasible.

Number of domestic properties served by the sewage treatment system x 30 metres = Answer metres
- 3) In addition to Planning Permission and Building Regulation approval **you may also require an Environmental Permit from the Environment Agency (EA). Please note that the granting of Planning Permission or Building Regulation approval does not guarantee the granting of an Environmental Permit. Upon receipt of a correctly filled in application form the EA will carry out an assessment. It can take up to 4 months before the Agency is in a position to decide whether to grant a permit or not.**
- 4) The use of cesspools is an option of last resort as set out in the non-mains drainage hierarchy of preference in [Building Regulations Approved Document H](#). In principle, a properly constructed and maintained cesspool, being essentially a holding tank with no discharges, should not lead to environmental, amenity or public health problems. However, in practice, it is known that such problems occur as a result of frequent overflows due to poor maintenance, irregular emptying, lack of suitable vehicular access for emptying and even through inadequate capacity. In addition to this the requirement for frequent emptying is usually carried out by a contractor involving road transport with associated environmental costs. For these reasons, the use of cesspools will not normally be considered to be a long-term foul sewage disposal solution. In view of the environmental risks associated with their use, any proposal to use cesspools must be fully justified to the Local Planning Authority
- 5) Package treatment plants and septic tanks should be designed and sized according to the advice given in the current edition of [Flows and Loads](#), published by British Water. Volumes for larger systems should be calculated based on expected flows arising from the development.
- 6) You should refer to [Building Regulations Approved Document H2](#) with regard to the general requirements for construction of non mains sewerage systems. **Sections 1.33 to 1.38** deal with the test requirements for trial holes and percolation tests and for convenience the text of these sections is repeated below:

- 1.33 *A trial hole should be dug to determine the position of the standing groundwater table. The trial hole should be a minimum of 1m² in area and 2m deep, or a minimum of 1.5m below the invert of the proposed drainage field pipework. The ground water table should not rise to within 1m of the invert level of the proposed effluent distribution pipes. If the test is carried out in summer, the likely winter groundwater levels should be considered. A percolation test should then be carried out to assess the further suitability of the proposed area.*
- 1.34 *Percolation test method – A hole 300mm square should be excavated to a depth 300mm below the proposed invert level of the effluent distribution pipe. Where deep drains are necessary the hole should conform to this shape at the bottom, but may be enlarged above the 300mm level to enable safe excavation to be carried out. Where deep excavations are necessary a modified test procedure may be adopted using a 300mm earth auger. Bore the test hole vertically to the appropriate depth taking care to remove all loose debris.*
- 1.35 *Fill the 300mm square section of the hole to a depth of at least 300mm with water and allow it to seep away overnight.*
- 1.36 *Next day, refill the test section with water to a depth of at least 300mm and observe the time, in seconds, for the water to seep away from 75% full to 25% full level (i.e. a depth of 150mm). Divide this time by 150mm. The answer gives the average time in seconds (V_p) required for the water to drop 1mm.*
- 1.37 *The test should be carried out at least three times with at least two trial holes. The average figure from the tests should be taken. The test should not be carried out during abnormal weather conditions such as heavy rain, severe frost or drought.*
- 1.38 *Drainage field disposal should only be used when percolation tests indicate average values of V_p of between 12 and 100 and the preliminary site assessment report and trial hole tests have been favourable. This minimum value ensures that untreated effluent cannot percolate too rapidly into groundwater. Where V_p is outside these limits effective treatment is unlikely to take place in a drainage field. However, provided that an alternative form of secondary treatment is provided to treat the effluent from the septic tanks, it may still be possible to discharge the treated effluent to a soakaway.*

N.B. When determining whether a discharge may be made under statutory General Binding Rules one of the requirements is that any drainage field must be designed and constructed in accordance with BS6297:2007. This specifies that the minimum percolation rate under that standard is 15s/mm and any discharge made to ground where the percolation rate is less than 15s/mm is subject to the granting of an Environmental Permit.

- 7) Developers may requisition a sewer from the Sewerage Undertaker to connect their development to the public sewer. Should this not be feasible on the grounds of cost and practicability, on site treatment in the form of package plants and their associated sewers (if constructed to an acceptable standard) can be offered to the sewerage undertaker for adoption. This approach is in support of advice from the Government contained in the [National Planning Practice Guidance](#) Developers are urged to discuss their requirements with the Sewerage Undertaker at the earliest possible opportunity.
- 8) Glossary

Package treatment plant

A package treatment plant is a system which offers varying degrees of biological sewage treatment and involves the production of an effluent which can be disposed of to ground via a drainage field or direct to a watercourse. There are many varieties of package treatment plant but all involve settling the solids before and/or after a biological treatment stage and almost all use electricity. Package treatment plants usually treat sewage to a higher standard than septic tanks but are vulnerable in the event of power failures and require more regular servicing and maintenance to ensure that they work effectively. The type of system chosen should be appropriate to the type of development proposed and take account of variations in flow and periods of inactivity, for example where the system will serve holiday accommodation where occupation and maintenance may be more irregular.

Septic tank

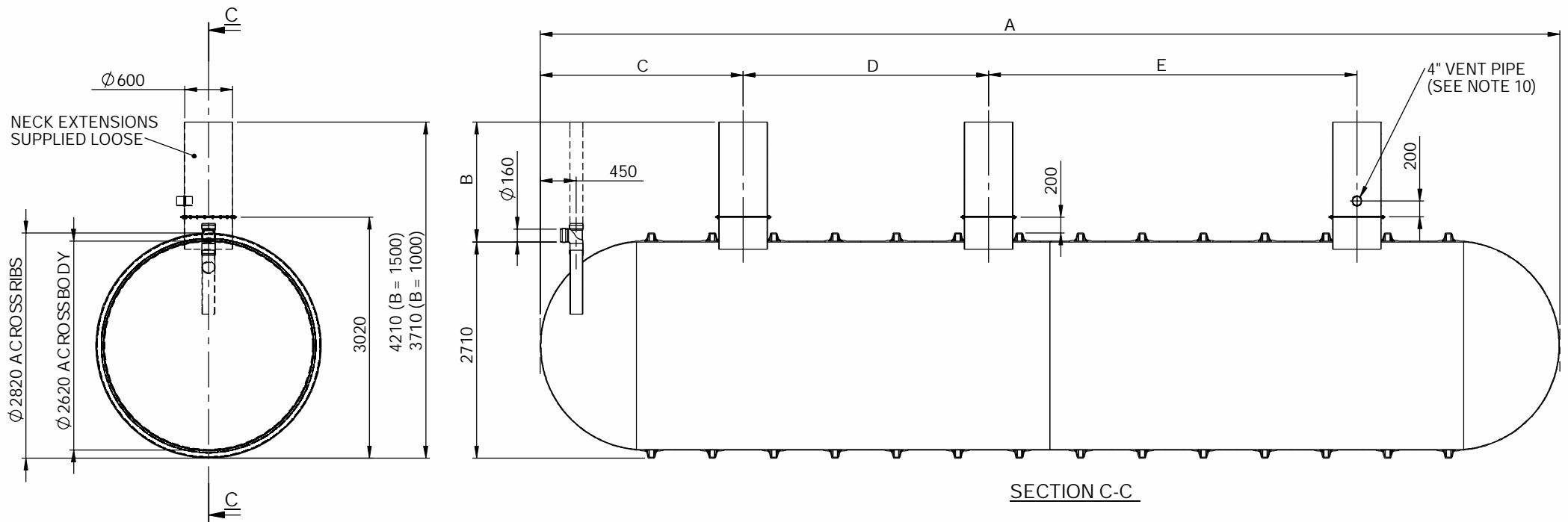
A septic tank is a two or three chamber system, which retains sewage from a property for sufficient time to allow the solids to form into sludge at the base of the tank, where it is partially broken down. The remaining liquid in the tank then drains from the tank by means of an outlet pipe.

Effluent from a septic tank is normally disposed of to ground via a drainage field and receives further treatment in the soils surrounding that drainage field, so that it does not generate a pollution risk to surface waters or groundwater resources (underground water). The most commonly used form of drainage field is a subsurface irrigation area, comprising a herringbone pattern of interconnecting dispersal pipes laid in shallow, shingle filled trenches. The dispersal pipes within the drainage field should be located at as shallow a depth as possible, usually within 1 metre of the ground surface. A septic tank typically needs to be desludged at least once a year in order to ensure that it continues to work effectively.

Cesspool

A cesspool is a covered watertight tank used for receiving and storing sewage and has no outlet. It relies on road transport for the removal of raw sewage and is therefore the least sustainable option for sewage disposal. It is essential that a cesspool is, and remains, impervious to the ingress of groundwater or surface water.


Appendix C: Cesspool



Nominal Volume (Litres)	Nominal Volume (Gallons)	Weight (Kg)	Overall Length A	Inlet Invert B = 1.5 Metres	Inlet Invert B = 1.0 Metres	Dimension to neck C	Dimension between necks D	Dimension between necks E
54,000	11,880	2,229	11,222	1,500	1,000	2,538	3,073	3,075
59,000	12,968	2,317	11,991	1,500	1,000	2,538	3,073	3,842
63,000	13,860	2,538	12,760	1,500	1,000	2,538	3,073	4,611
71,000	15,620	2,998	14,295	1,500	1,000	2,538	4,610	4,610
79,000	17,380	3,477	15,833	1,500	1,000	2,538	5,379	5,379

NOTES-

- CESSPOOLS AND SILAGE TANKS MUST NOT DISCHARGE IN TO THE ENVIRONMENT AND MUST BE EMPTIED WHEN FULL.
- THE TANK IS FITTED WITH A 160MM INLET SOCKET. PIPE ADAPTORS CAN BE PROVIDED FOR AN ALTERNATIVE SIZE OF 110mm. THESE ARE FITTED EXTERNALLY TO THE TANK.
- THIS DRAWING IS PROVIDED TO SUPPLY DIMENSIONAL INFORMATION ONLY.
- THE UNIT MUST BE INSTALLED WITH A CONCRETE SURROUND. PLEASE SEE THE DETAILED INSTALLATION PROCEDURE SUPPLIED WITH EACH UNIT.
- THE UNIT IS SUPPLIED WITH LOOSE, BOLT ON TANK SHAFTS TO SUIT EITHER 1 OR 1.5 METRE INVERT (SPECIFY WITH ORDER). THEY MUST BE FITTED ON SITE AS PART OF THE INSTALLATION AND CAN BE TRIMMED TO SUIT THE EXACT SIZE OF INVERT.
- THE UNIT IS PROVIDED WITH 1, 2 OR 3 SHAFTS, DEPENDING ON IT'S VOLUME. TO AID DE-SLUDGING IT IS RECOMMENDED THAT 2 SHAFTS ARE SELECTED FOR TANKS WITH CAPACITIES OF 34m³ AND ABOVE. 3 SHAFTS SHOULD BE FITTED TO UNITS OF ABOVE 54m³ (SPECIFY WITH ORDER). ADDITIONAL SHAFTS CAN BE FITTED. UNITS SHOULD NOT BE INSTALLED DEEPER THAN NECESSARY, NOR DEEPER THAN THE INVERT SPECIFIED FOR THE UNIT SUPPLIED.
- PEDESTRIAN DUTY COVER AND FRAMES TO FIT DIAMETER 600mm NECKS, ARE AVAILABLE FOR PURCHASE.
- THE WEIGHTS GIVEN ARE FOR HANDLING PURPOSES ONLY AND EXCLUDE THE BOLT ON SHAFTS.
- THE INLET PIPE SHOULD BE EXTENDED TO GROUND LEVEL. DIAMETER 450mm ACCESS COVERS ARE FOR PURCHASE TO ALLOW FOR RODDING ACCESS.
- SINGLE NECK TANKS SERVING SINGLE PROPERTIES SHOULD BE VENTED, USING THE SOIL STACK. LARGER TANKS SERVING MULTIPLE PROPERTIES SHOULD HAVE A VENT FITTED TO THE NECK TO ENABLE LOCALISED HIGH LEVEL VENTING.
- WE RECOMMEND THE PURCHASE AND USE OF A HIGH LEVEL ALARM WITH THESE TANKS.

Material : Various	Tolerance (unless stated) :	Drawing : DS0963P - Ø2.6 CP - SL	Page 3 of 3
Finish :	Thickness : n/a		
	Surface Area :	TRIPLE NECK CESSPOOL / SILAGE TANK	
All dimensions in mm		Scale: Not to scale	
<p>Kingspan Environmental reserve the right to alter the details of this drawing without prior notice. This drawing is copyright and may not be reproduced or used without the written permission of Kingspan Environmental</p> 			

Appendix D: Viability of Packaged Treatment Plants for Intermittent Use

The suitability of treatment plants for intermittent use - FAO Amy

Marsh Sales [redacted]
To: Tom Quigg [redacted], Marsh Sales [redacted]
Cc: Oliver Beaumont [redacted]

16 November 2023 at 08:51

Good Morning Tom,

Thank you for your email.

I can confirm that Sewage Treatments Plants work efficiently with a consistent flow entering them.

If there are, times, which are going to have limited to no flow for extended periods this, will have a detrimental effect on the treatment process.

This is due to the bacteria in the tank requiring the waste to feed on and to remain active.

Without any waste the bacteria will start to die off, our tanks do have a sludge return, which will continue to circulate the waste in the sewage treatment plant for general holiday periods.

If you believe, the tank will be unused for months at a time I would suggest a Septic tank or Cesspool, as these do not rely on consistent waste.

With all cesspools, we would recommend a High Level Alarm, which will alert the customer when the tank is nearing full capacity and needs emptying.

Our lead-time on large cesspools currently is 2-3 working weeks however; lead times are subject to change.

Concerning Builders Merchants in the Frinton-On-Sea area, we would recommend, Huws Gray Clacton-on-Sea, Silverton Aggregates & Builders Merchants, Travis Perkins Clacton-on-Sea.

I would recommend speaking to our Area Sales Manager Oliver Beaumont (07432426995) for more assistance on this.

Kind Regards

Ammie Collis-Neale
General Sales Manager – Internal & External Sales

HQ: [redacted]

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From: Tom Quigg [redacted]
Sent: 15 November 2023 12:44
To: Marsh Sales [redacted]
Subject: The suitability of treatment plants for intermittent use - FAO Amy

You don't often get email from [redacted] Learn why this is important

Hi Amy,

Following our conversation, I'd like to ask for your advice on the suitability of wastewater treatment plants for sites that might not be active for weeks at a time, such as traveller sites. In such scenarios, we've opted for cesspools. As discussed, if you could also let me know your expected lead-in times for these larger cesspools and suggested building merchants in the area (Frinton-on-Sea), I would appreciate it.

The development proposes the siting of 6 mobile homes with approximately 12 people using the site. There are no public sewers in the vicinity of the site, and this development will have extended periods of inactivity and will have no flows throughout the year.

If you could let me know your thoughts on this, I would very much appreciate it.

Kind regards,
Tom

FW: 1007 The suitability of treatment plants for intermittent use - Essex Site

Liz King <[redacted]>
To: Tom Quigg <[redacted]>

15 November 2023 at 14:55

Afternoon Tom

Given your constraints, it is not feasible for site to have a treatment plant as you need a constant flow of sewage through the unit to it to work efficiently
So, in this case a cesspool is the only options

Best regards

Liz

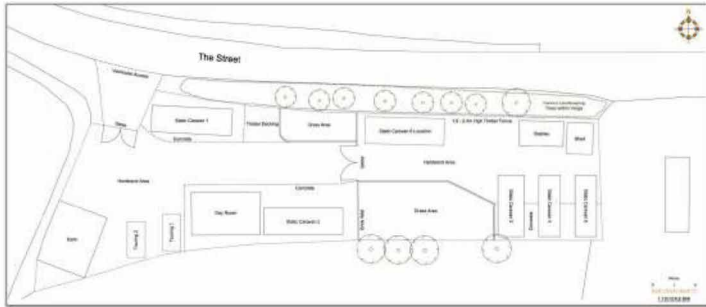
Liz King
Internal Sales Advisor
Kingspan Klargester
T: [redacted]

From: Tom Quigg <[redacted]>
Sent: 15 November 2023 14:51
To: Liz King <[redacted]>
Subject: Re: FW: 1007 The suitability of treatment plants for intermittent use - Essex Site

Hi Liz,

Thanks for getting back to me. I appreciate the feedback and for the attached information.

Foul water infiltration via drainage fields etc is not viable due to the very constrained nature of the site, achieving the required easements to site boundaries, and proximity to structures and habitable buildings limits our options for foul water percolation systems.



There is a nearby ordinary watercourse/ditch which we could provide an outfall into. However, as mentioned the concern is the viability and functionality of packaged treatment plants when not in use for weeks or even months at a time.

Given these constraints, would you suggest the only viable option is to discharge to a cesspit?

Thanks again for your valued input.

Kind regards,

Tom

 **flume**
Consulting Engineers
Tom Quigg BSc MSc CEng MICE
Director
[redacted]
flumeconsultants.com

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