Proposed Dwelling
Lodge Lane
Axminster
Devon
EX13 5RT

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Shadow Habitat Regulation Assessment

S24-008/SHRA
December 2023

Prepared by :

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On behalf of :

Sue Vincent
Pinneywood Farm
Lodge Lane
Axminster
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1.0 Introduction

Southwest Environmental Limited were commissioned by Sue Vincent to undertake this Shadow Habitats Regulation Assessment

This document is a Shadow Habitats Regulation Assessment (sHRA) report is in compliacne with the requirements of the Conservation of Habitats and Species Regulations 2017 (as amended); hereafter referred to as the 'Habitats Regulations'.

This document has been prepared to assist the assessment of the potential for effects from nutrient changes caused by the proposed plan or project on the River Axe SAC as required by Regulation 63 of the Habitats Regulations.

Appendix A contains important background information and guidance on completing an HRA using this template and must be read in full before using this document.

The River Axe SAC is vulnerable to nutrient loading and is located within the East Devon Council administrative area. The site is protected by the Habitats Regulations and any proposals that could affect it requires an HRA.

This document is to be submitted to Natural England (NE) as the statutory advisor for designated nature conservation sites in England to formally request their views on the assessment under Regulation 76 of the Habitats Regulations, and specifically whether they can concur with the conclusions.

1.1 The HRA Process

Regulation 63 of the Habitats Regulations requires a competent authority to make an 'Appropriate Assessment' of the implications of the plan or project for that site in view of its Conservation Objectives, before deciding to undertake or give consent for a plan or project which (a) is likely to have a significant effect on a European Site (either alone or in-combination with other plans or project), and (b) is not directly connected with or necessary to the management of that site. In light of the conclusions of the assessment, the competent authority may proceed with or consent to the plan or project only after having ascertained that it will not adversely affect the integrity of the European Site.

All plans and projects should identify any possible effects early in the process and then either alter the plan or project to avoid them or introduce mitigation measures to the point where no adverse effects remain. The 'competent authority' shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned, and if appropriate, having obtained the opinion of the general public.

The assessment of a project under the Habitats Regulations can be split into four stages as shown in Table 1. This template covers Screening (Stage 1) and Appropriate Assessment (Stage 2).

Table 1- Stages of HRA

Stage	Description
Screening (Stage 1)	Assessment of the likelihood of a plan or project, alone or in-combination, having a significant effect on a European Site or its features. If a significant effect is likely, an Appropriate Assessment is required as set out in Regulation 63(1).
Appropriate Assessment (Stage 2)	A detailed consideration of the potential effects of the plan or project in relation to the Conservation Objectives for the European Site(s) to determine if there is likely to be an adverse effect on the integrity of the site (i.e. an effect that would compromise the site meeting its Conservation Objectives). If it can be demonstrated that with appropriate mitigation measures the plan or project would not give rise to an adverse effect on the integrity of a European Site, the plan or project can proceed.
Assessment of Alternative Solutions (Stage 3) **not covered in this template**	Where it cannot be demonstrated that there is no adverse effect, or there is uncertainty, the assessment would then need to consider if there were any other alternatives to the plan or project that would not give rise to adverse effects on the integrity of the European Site.
Assessment where no alternative solutions exist and where adverse impacts remain (Stage 4) **not covered in this template**	If adverse effects are still likely then the competent authority would then consider if there are any Imperative Reasons of Overriding Public Interest (IROPI), only at this stage can Compensatory Measures be considered. It is very unusual for plans or projects to be considered in Stages 3 or 4.

2.0 Guidance and Policy when Assessing the Potential Effects of a Plan or Project

The following guidance and policy must be followed when assessing the potential effects of the plan or project:

> The Habitats Regulations Assessment Handbook, DTA Publications Ltd ; which includes analysis of relevant recent caselaw, and
> Gov.uk website ;

Professional advice should be sought when required in order to ensure a thorough and scientific assessment of the plan or project and its potential effects on a European Site.

In addition to the guidance noted above, a number of websites can be used to gather information on the European Sites in order to inform the assessment, in particular, the Management Plans for European Sites and Regulation 37 information. This is not an exhaustive list, however commonly used websites used include:

Natural England (NE) website ;
MAGIC (Multi-Agency Geographic Information for the Countryside) website ;
Joint Nature Conservation Committee (JNCC) website .

2.1 A Note on Case Law Regarding the Consideration of Mitigation

With regards to recent case law (Coillte vs People Over Wind) the inclusion of plainly established and uncontroversial mitigation during Stage 1 is no longer considered appropriate. Mitigation, as considered by the Centre Européen de Coopération Juridique (CECJ) in regard to the case law, is interpreted to mean measures that are intended to avoid or reduce the harmful effects of the envisaged plan or project on the site concerned.

Consequently, any plan or project which identifies an impact on a European Site and where avoidance and mitigation is applicable will need to address these measures during Stage 2 Appropriate Assessment.

3.0 Details of the Plan or Project

3.1 Overview

Application reference number	21/2990/PDQ
Applicant details	Sue Vincent
Document prepared by/ and on behalf of	Southwest Environmental Limited for Sue Vincent
Plan or Project Name	1 Dwelling Pinneywod Farm
Plan or Project Location	Proposed Dwelling Lodge Lane Axminster Devon EX13 5RT
European Site(s) potentially affected	River Axe SAC
Component SSSI(s):	NA

3.2 Plan or Project Site Location

The site resides within a rural area, see the creation of a new dwelling.

3.3 Environmental Baseline

The site currently adjacent to a residential curtilage, the site area is currently used for agricultural purposes.

Hydraulic connectivity exists in the form of run-off which may support seasonal flow of tributaries of the River Axe, which in via its tributaries is connected to Designated Sites.

3.4 Plan or Project Description

1 no. Residential dwelling.

Drawings of the plan or project are provided in Appendix E.

3.5 Construction Methodology and Programme

Construction techniques will be standard.

3.6 Operation

3.6.1 Operational Phosphorous Outputs

3.6.1.1 Before Mitigation

If the project were to continue without mitigation. Foul water from the proposed residential use would be discharge to foul drains, and via ground water it would impact on seasonal flow of rivers.

Owing the hydraulic connectivity of the proposal to the designated sites, this would result in a Phosphorous loading of 0.04kg/year.

This includes a 20% precautionary buffer.

Phosphorus is inherent in faeces and urine, and is also present in detergents and toothpaste. These outputs would be maintained fairly constantly during residential use of the project.

3.6.1.2 After Mitigation

The client intends to provide 0.04kg of Phosphorous Credits, from scheme S24-008/PCR.

Therefore the additional load from the development will be 0 kg/year. The project will be Phosphorous Neutral.

There is a full description of the onsite treatment system in report S24-008/PCR. It includes biological treatment of foul effluent.

3.6.1.2.1 Maintenance and monitoring

Maintenance and Monitoring will be required to be undertaken by the site owner in perpetuity. Details of Maintenance and Monitoring are provided in report S24-008/PCR. They have been provided in duplicate in Appendix F of this report.

3.6.1.3 Limitations

The Phosphorous Budget Calculator used to calculate phosphorous outputs for the plan or project follows a generic ‘broad-brush’ approach and therefore cannot be tailored to meet each specific sites or situations. This is detailed in the calculator information page which states,

> *“The tool has been designed so that the user is able to update the data and methods in light of any new research or understanding” and “The information supplied in this tool is for guidance purposes only and is not intended to provide an exact budget calculation due to the limitations and assumptions of the model. The user is responsible for ensuring the accuracy and completeness of all data entered, be it manually or automatically, and used by this tool.”*

4. 0 Information about the Somerset Levels and Moors SAC Site

4.1 Identifying sites

European Sites that are located close to the plan or project or are linked by pathways such as hydrological connections must be identified. This report is for plans or projects potentially affecting the River Axe SAC via nutrient change.

Please note that if European Sites other than the Somerset Levels and Moors SAC Site are identified as being linked to the project, this template alone may not be suitable, and further professional advice should be sought.

4.2 European Site Conservation Objectives and Qualifying Features

Distance and direction are measured as a straight line from the closest edge of the plan or project to the closest edge of the European Site.

The features and the conservation objectives of the River Axe SAC and the potential vulnerability of the features to any effects that might arise from the plan or project are summarised in Table 3.

4.2.1 River Axe SAC

Table 3: Characteristics of the River Axe[1]

The mixed catchment geology of sandstones and limestones gives rise to calcareous waters where stream watercrowfoot Ranunculus penicillatus ssp. pseudofluitans dominates, giving way to river water-crowfoot R. fluitans further downstream. Short-leaved water-starwort Callitriche truncata is an unusual addition to the watercrowfoot community.

The diverse flora results from a number of contributing factors. Firstly, the lower reaches of the Axe have high bed stability. Secondly, the river has few trees along its banks, allowing much light to reach the riverbed. Finally, the active geomorphology of the river has generated a range of natural features (including long riffles, deep pools, islands and meanders), which provide a variety of ecological niches.

This variety of river channel habitats also supports an important fish community, including Atlantic salmon Salmo salar, sea lamprey Petromyzon marinus, brook lamprey Lampetra planeri and bullhead Cottus gobio.

The Conservation Objectives for the River Axe SAC state that 'the natural nutrient regime of the river should be protected, with any anthropogenic enrichment above natural/background concentrations should be limited to levels at which adverse effects on characteristic biodiversity are unlikely'.

The occurrence of excessive nutrients in the waterbody can impact on the competitive interactions between high plant species and between higher plant species and algae, which can result in a dominance in attached forms of algae, and a loss of characteristic plant species. Changes in plant growth and community composition can have implications for the wider food web, and the species present. Increased nutrients and the occurrence of eutrophication can also impact on the dissolved oxygen levels in the waterbody, also impacting on biota withinthe river.

Recent water quality measurements for the River Axe within the SAC show phosphorus concentrations to be exceeding the targets for all units. Any nutrients entering the catchment

[1] https://eastdevon.gov.uk/media/3724098/raxe-sac_evidence-pack.pdf

upstream of the locations which are exceeding their nutrient targets, will make their way downstream and have the potential to further add to the

current exceedance. Hence the catchment map for the River Axe includes the entire catchment upstream.

5.0 Stage 1 - Screening of the Plan or Project

5.1 Likelihood of Significant Effects alone

Stage 1 of the HRA, the screening, is a test of Likely Significant Effect (LSE) to determine whether an Appropriate Assessment is required against all impact pathways identified. The screening is done considering the proposal in isolation and therefore not in-combination with any other plans or projects. It is also done in the absence of avoidance or other mitigation measures. Note that the assessment is made with awareness of the conservation objectives for the features of the European Site, however the actual assessment of the plan or project against the conservation objectives is not required until the Appropriate Assessment (Stage 2).

5.1.2 Potential Impact Pathways

The proposed development will result in an increase in phosphate loading within the hydrological catchment of the SAC, through the production of wastewater/slurry during construction or operation, potentially leading to degradation of habitat or changes in water quality.

The proposed development could result in species mortalities and injuries e.g. through pollution incidents during wet weather to the adjacent watercourse.

The increased phosphorous input could lead to eutrophication of the watercourse and connected waterbodies during construction or operation.

5.1.3 Likely Significant Effects

We would consider the receptor to be of high vulnerability.

Risk to the receptor will be present during operational phase of the development.

The geographical extent has potential to be considerable, if mitigation is not maintained.

There is a potential net gain of phosphorous due to the plan or project, with an impact pathway to the SAC Site although there will not be a Likely Significant Effect on the SAC integrity. This net phosphorous due to the plan or project when assed alone, is unlikely to measurable. Contributions from the project when assed alone would not impact on current position of Natural England on the unfavourable condition of the River Axe SAC (refer to Appendix A for more information).

However, there are potential cumulative impacts that are assed in subsequent chapters.

Table 4: Potential effects of the plan or project alone on the River Axe SAC

Qualifying Feature	Relevant conservation objectives	Potential impact pathway	Likely Significant Effect alone
1	2	3	4
European Site: River Axe SAC			
SAC criteria 2 - A SAC should be considered internationally important if it supports vulnerable, Supports 17 species of Red Data Book invertebrates. The vascular plants Wolffia arrhizal morsus-ranae and Peucedanum palustre are considered	Ensure that the integrity of the SAC site is maintained or restored as appropriate, and ensure that the si contributes to achieving the wise use of wetlands across the UK, by maintaining or restoring; The extent and distribution of qualifying habitats and habitats of qualifying species The structure and function of qualifying habitats and habitats of qualifying species The supporting processes on which qualifying habitats and habitats of qualifying species rely The populations of each qualifying species, and, The distribution of each qualifying species within the site.	The proposed Development will result in an increase in phosphate loading within the hydrological catchment of the SAC, through the production of wastewater/slurry during operation, potentially leading to degradation of habitat or changes in water quality.	**There is an impact pathway and significant effects that cannot be ruled out.** **If appropriate Mitigation is Not Secured**

Natural England is satisfied that additional nutrients from typical new developments are unlikely, either alone or in-combination, to have a likely significant effect on the internationally important bird communities for which the site is designated (and the bird communities come under criteria 5 and 6). Refer to Appendix A for more information.
Screening Decision of the Plan or Project Alone
The issue it not with a single project. It lies with cumulative impacts. However, if this and other projects are made to be Phosphorous Neutral then over outcome to receptor should not be detrimental.
Limitations We cannot comment on the efficacy of the phosphorous budget calculator, as we are not privy to the mathematics used therein. However, having compared various calculations methods from across the UK, we are reasonably confident the result it representative, and that the precautionary buffer of 20% adequately accounts for any uncertainties.

Within the HRA process it would be normal to carry out an in-combination assessment at screening stage, should a conclusion of no Likely Significant Effect be reached. However, the position adopted by Natural England means that if there is an increase in phosphorous due to the project, then a conclusion of no Likely Significant Effect should not be reached.

6.0 Stage 2 - Appropriate Assessment

6.1 Appropriate Assessment of the plan or project alone

Where screening in Table 4 has determined that the plan or project may have a likely significant effect on the River Axe SAC alone, an Appropriate Assessment is required. The Appropriate Assessment is detailed in Table 5 and Table 6.

6.1.1 Assessment of Potentially Adverse Effects Without Additional Mitigation

If phosphorous is produced (and not mitigated against), then there will be an adverse effect on the SAC site integrity.

The River Axe Budget Calculator has been used to calculate the total quantity of phosphorous that is expected to be produced by the plan or project; insert this figure into the last row of the table as indicated (as calculated in Section 3.6.1.1).

Table 5: Appropriate Assessment of the plan or project alone and in the absence of any mitigation measures

Qualifying Feature	Impact pathway	Description of impacts and adverse effects	Assessment of adverse effects in relation to conservation objectives	Can adverse effect on River Axe SAC Integrity be ruled out? Yes or No
European Site: River Axe SAC				
SAC criteria 2 - A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities. Supports 17 species of Red Data Book invertebrates. The vascular plants Wolffia arrhiza, Hydrocharis morsus-ranae and Peucedanum palustre are considered vulnerable by the GB Red Book	The proposed development will result in an increase in phosphate loading within the hydrological catchment of the SAC, through the production of wastewater during operation, potentially leading to degradation of habitat or changes in water quality.	This will result in an increase in phosphorous (0.04/kg/yr) that will be treated in the catchment and ultimately discharged into the SAC Site. Due to the sensitivity of the SAC to any increase in phosphorous, this increase could cause further degradation or changes to water quality to the waterbodies which support the aquatic invertebrate assemblage and vascular plants named under criteria 2.	The increase in phosphorous could adversely affect all of the conservation objectives listed for the site; it will contribute to eutrophication of water bodies and changes to water chemistry within the site, thus making it unfavourable to aquatic invertebrates, affecting the structure and function of the habitats that support both them and vascular plants named under criteria 2.	**Without use of mitigation an adverse effect cannot be ruled out.**
Total Phosphorous produced by the plan or project in the absence of mitigation (as calculated in Section 3.6.1.1 = 0.04 kg/yr				

6.1.2 Assessment of Potentially Adverse Effects with Additional Mitigation

The Somerset Council Budget Calculator has been used to calculate the total quantity of phosphorous that is expected to be produced by the plan or project.

After mitigation measures are implemented (via the septic tank upgrades), the project should be considered Phosphorous Neutral.

Table 6: Appropriate assessment of the plan or project alone with any mitigation measures, conditions or restrictions

Qualifying Feature	Description of Adverse Effects	Can adverse effects be mitigated? Yes or No	Description of mitigation measures including how they would be applied	Can adverse effect on site integrity be ruled out?
SAC criteria 2 - A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities. Supports 17 species of Red Data Book invertebrates. The vascular plants Wolffia arrhiza, Hydrocharis morsus-ranae and Peucedanum palustre are considered vulnerable by the GB Red Book	The proposed development will result in an increase in phosphate loading within the hydrological catchment of the SAC, through the production of wastewater during operation, potentially leading to degradation of habitat or changes in water quality.	Yes	Phosphate Credits sourced from upgrade of septic tank to PTP and Filter bed, from within same catchment.	**Yes** **There will be no net gain in Phosphorous.**
Total Phosphorous produced by the plan or project with mitigation (as calculated in Section 3.6.1.2) = **0.00 kg/yr** (or use other more appropriate unit) N.B. Negative values show phosphorous removed from the catchment, '0' shows nutrient neutrality and positive values show that more mitigation is needed				
Concluding Statement of Appropriate Assessment Alone				
When considered alone, it has been determined that the proposal has no adverse effect on the integrity of the River Axe SAC. Cumulative impacts will be avoided by ensuring project is phosphorous neutral.				

6.2 Likelihood of Adverse Effects on Site Integrity owing to Cumulative Impacts

6.2.1 Likelihood of Adverse Effects in Combination Due to Nutrients

If nutrient neutrality is demonstrated for the project alone with mitigation in place, then there will be no adverse effect on integrity of the SAC Site due to nutrients.

Nutrient neutrality has been demonstrated for the project alone with mitigation in place and therefore there will be no adverse effect on integrity of the SAC Site due to nutrients. Therefore, no in-combination assessment is required.

7.0 Conclusions

It is concluded that the project will not adversely affect the integrity of the River Axe SAC, subject to the mitigation identified in section 3.6.1.2 being secured in perpetuity.

Appendix A

Background on Phosphorous and Planning Applications

Appendix B

Natural England Advice Note

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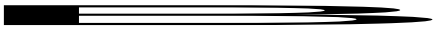
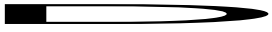

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Other Plans and Projects

Whilst nutrient neutrality is only currently being applied to development that would result in a net increase in population served by a wastewater system, the HRA requirements will apply to any plans or projects, including agricultural or industrial plans and projects that have the potential to release additional nitrogen and / or phosphorus into the system and that require an LPAs or the EA's consent, permission or approval.

A case-by-case approach will need to be adopted for these. Early discussions with Natural England via our chargeable Discretionary Advice Service (DAS) are recommended Natural England Discretionary Advice Service.

Competent Authorities must be cognisant of their duties under the Habitats Regulations when performing any of their functions. Competent Authorities may reasonably conclude that a HRA is required whenever they receive an application for any consent, approval, licence or permission for plans and projects not expressly referenced in this advice that may affect a habitats site. Natural England would welcome further discussion with you on any other types of plans and projects that you consider may have nutrients impacts.

5.0 Supporting Information

Annex A of this letter outlines the tools and guidance documents that will support LPAs in implementing this advice. There are also a suite of documents appended to this email including the generic Nutrient Neutrality Methodology, catchment specific calculators and associated guidance, catchment maps, Nutrient Neutrality Principles, Nutrient Neutrality – A Summary Guide and site specific evidence documents. We recommend reading the Nutrient Neutrality – A Summary Guide to help your understanding of what is a complex issue. Natural England has been working closely across government departments (Defra and DLUHC) in the preparation of this support package and will continue to do so in the development of longer term solutions.

The Planning Advisory Service will be hosting detailed teach ins and Q&A sessions on nutrient neutrality and we therefore strongly advise joining these as a first step to understanding the issue and as an opportunity to raise questions. Please follow the link for further details: Nutrient neutrality and the planning system | Local Government Association

Area Team contacts have been provided in Annex G as an initial point of contact for informal discussions. However, should you have any detailed or technical questions concerning this advice, please contact consultations@naturalengland.org.uk marked for the attention of the relevant Area Team. Please ensure that any formal consultations are also sent to consultations@naturalengland.org.uk.

Yours faithfully,

Melanie Hughes

Sustainable Development Programme Director

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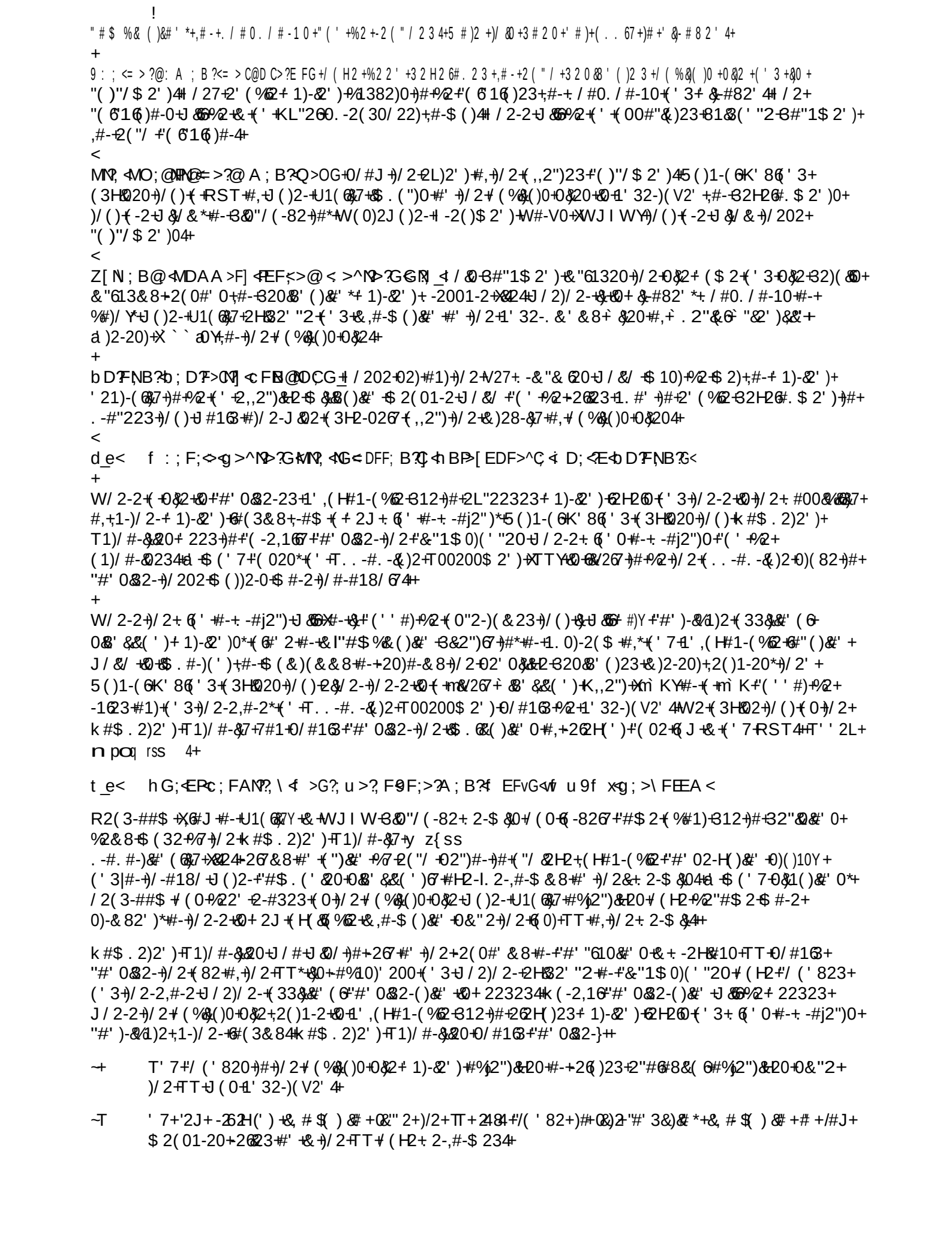

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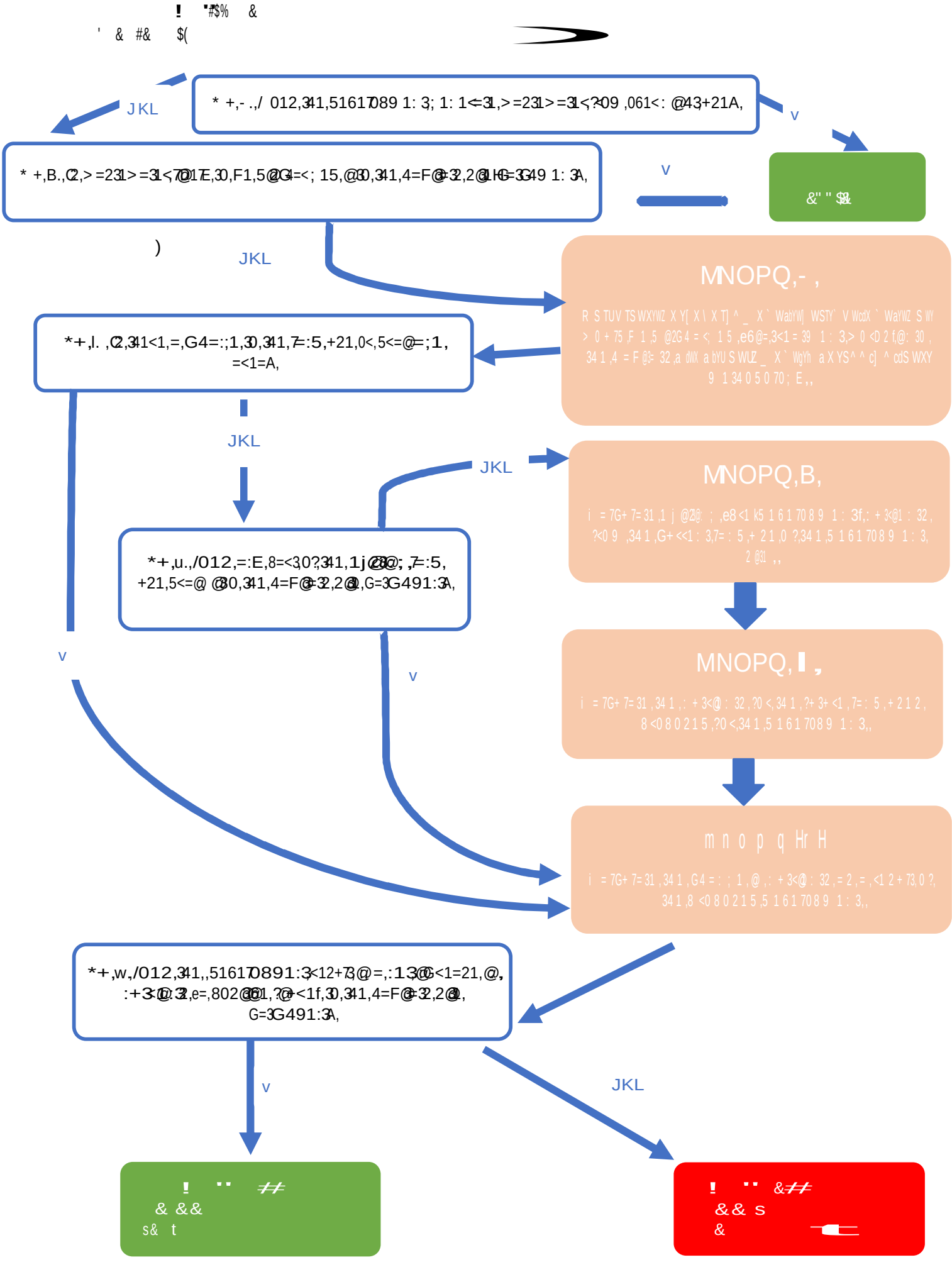
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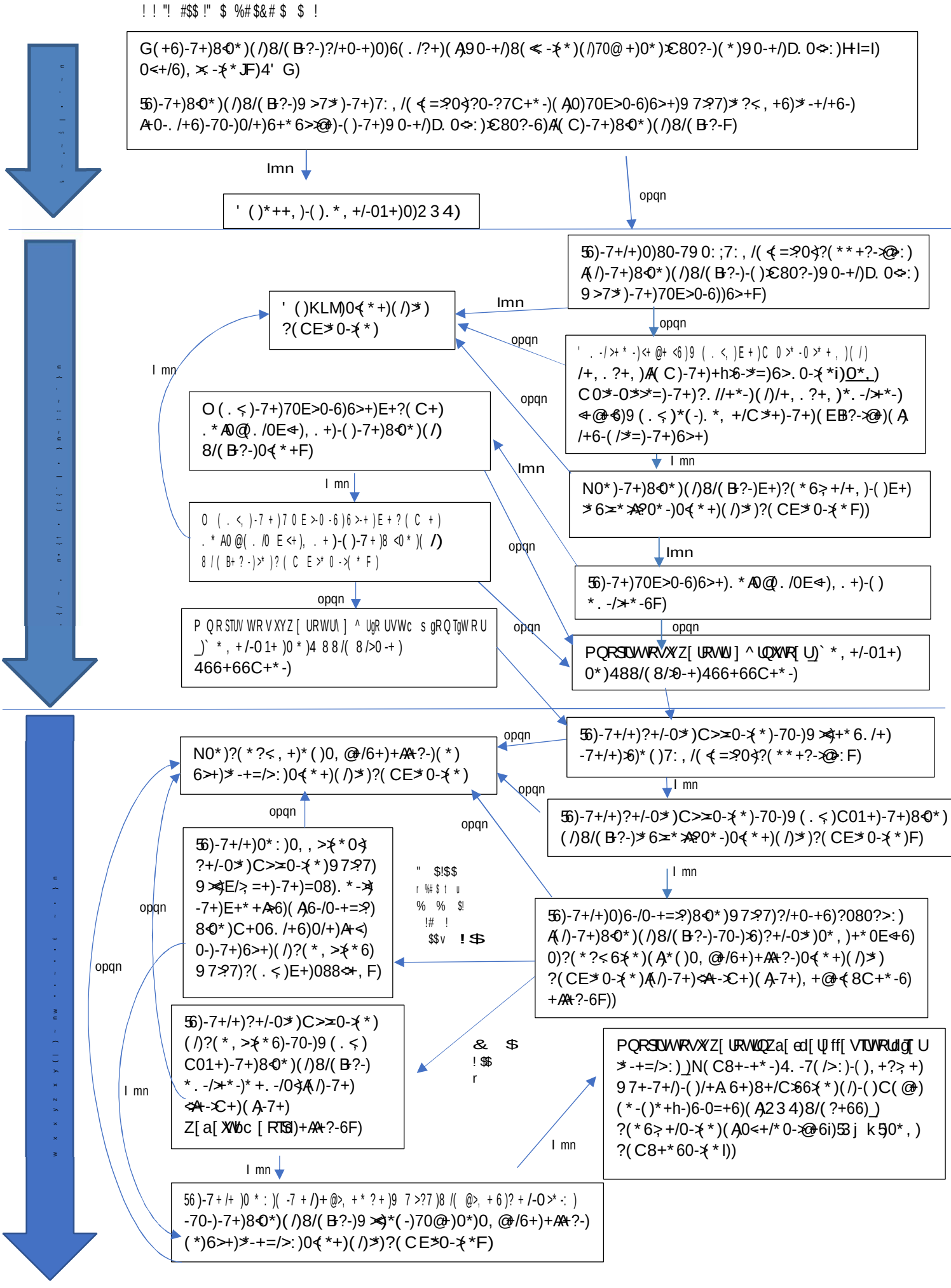
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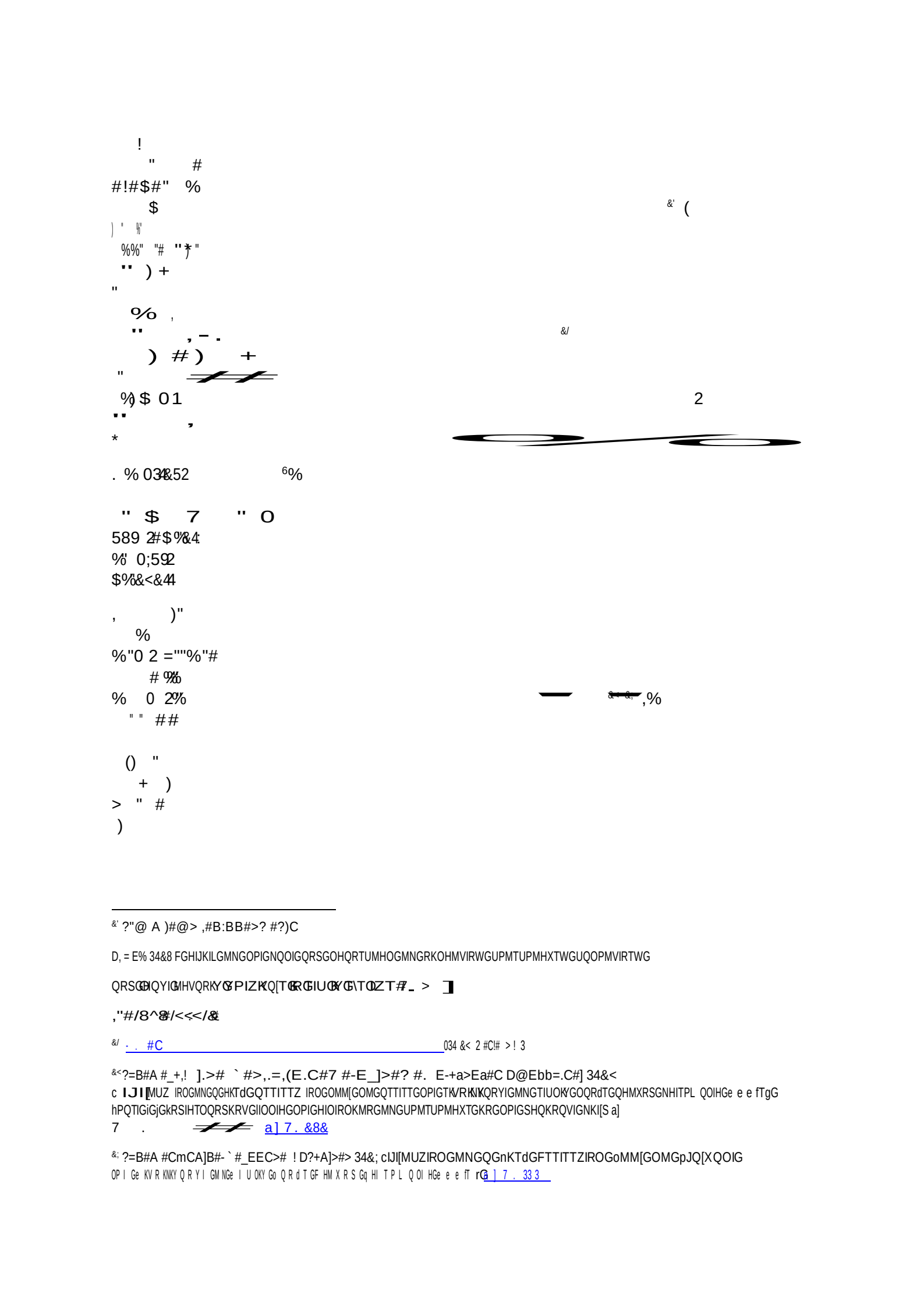

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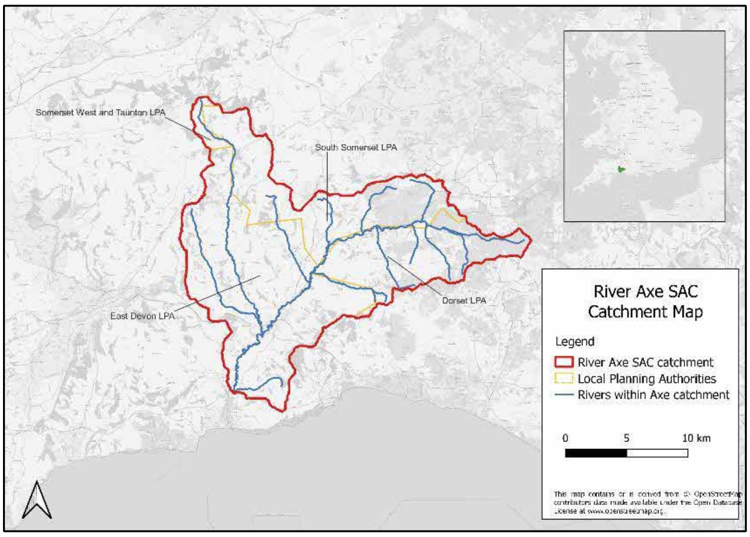

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Appendix C

Site Location Plan

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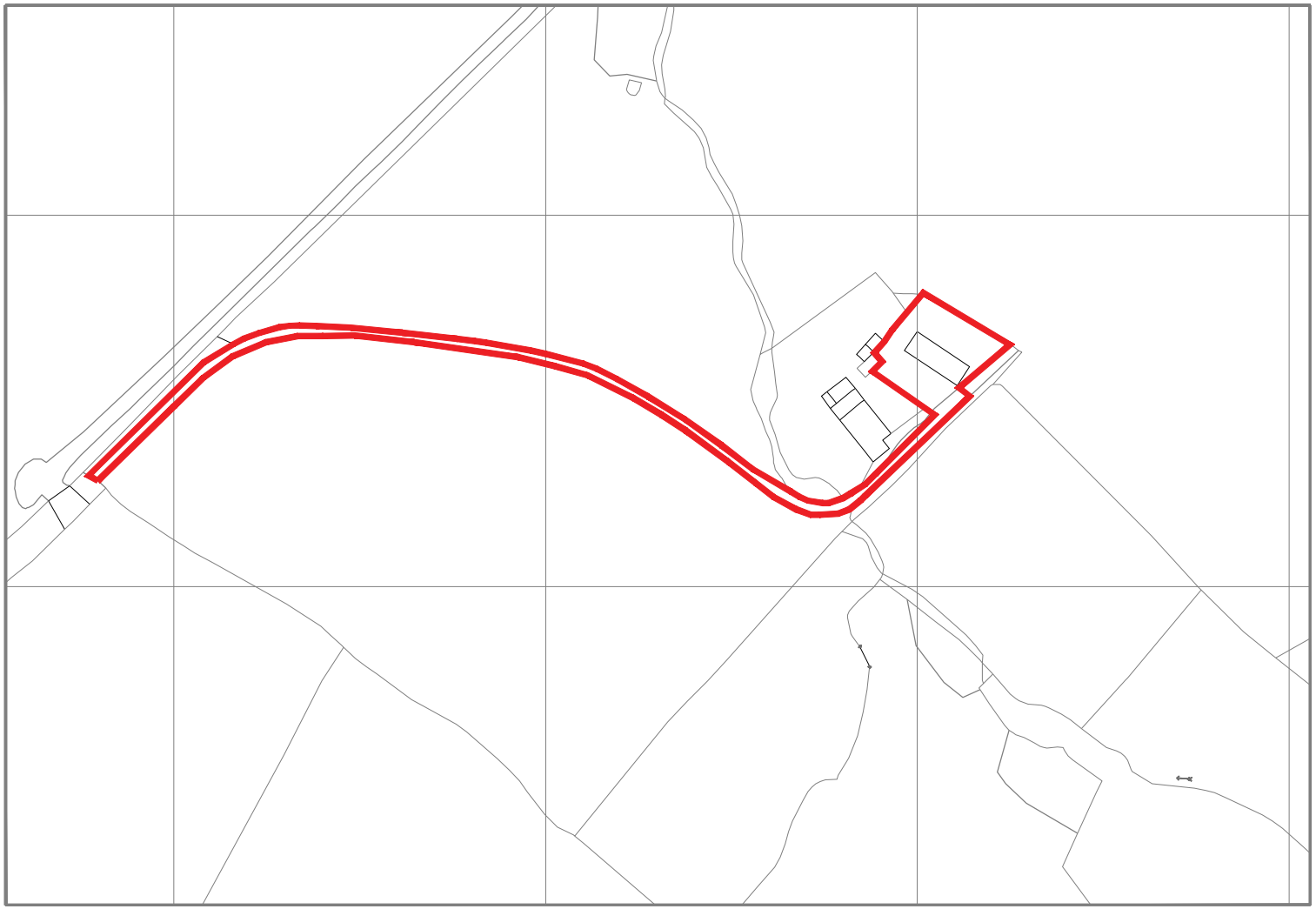

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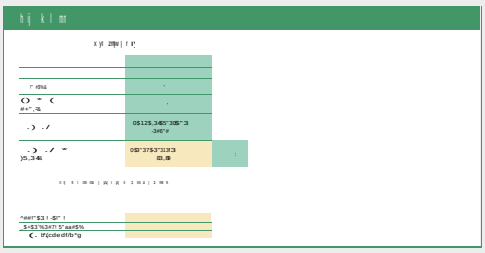
Appendix D

Environmental Baseline
(Budget Calculator)



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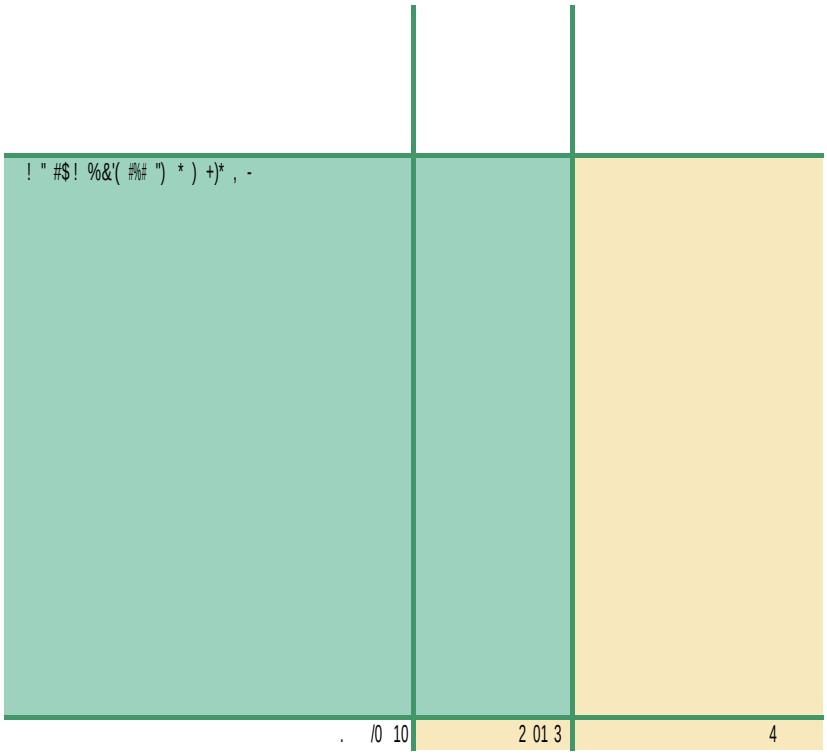
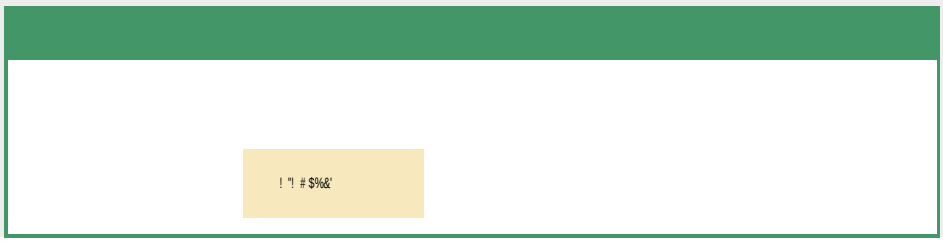
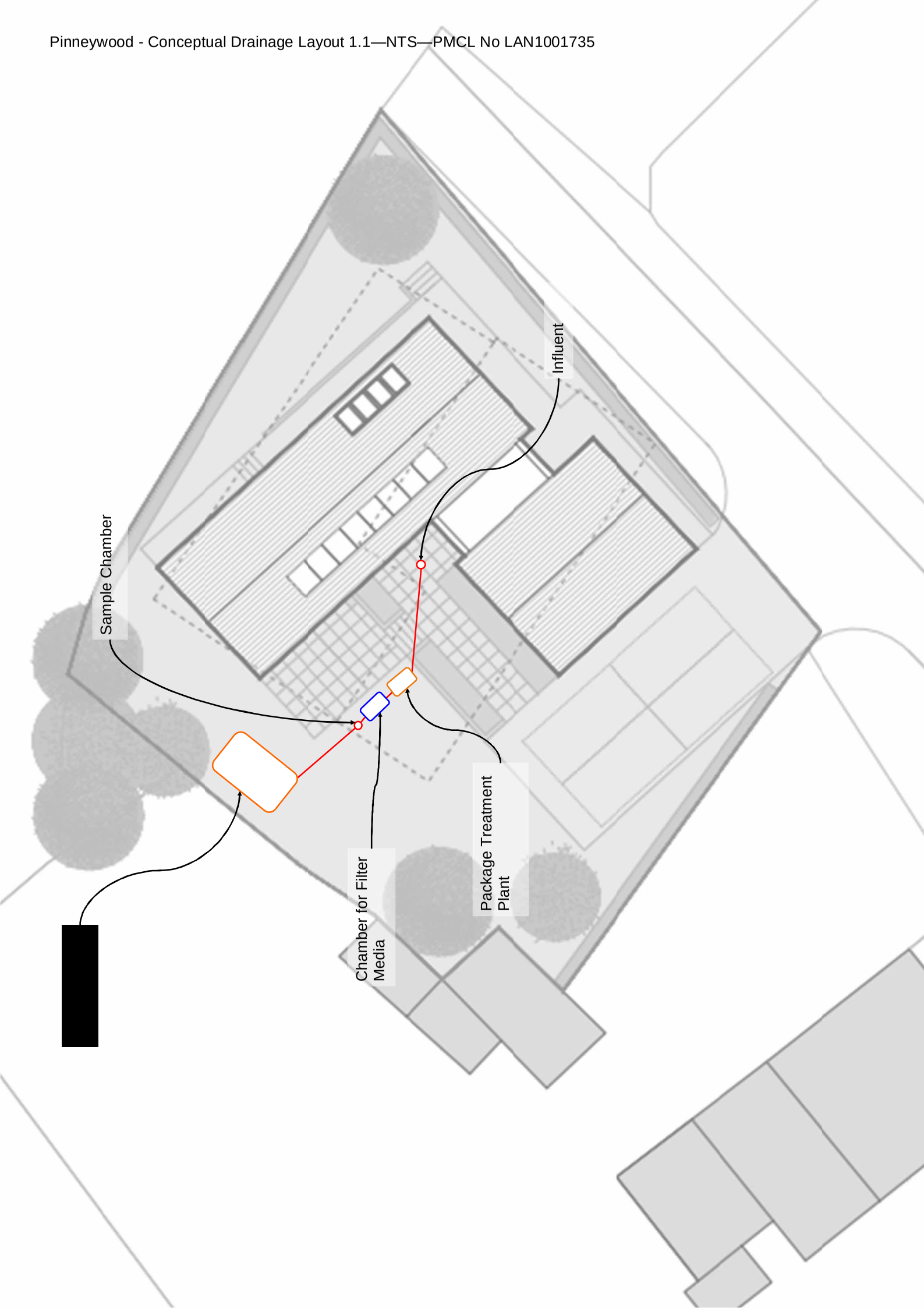


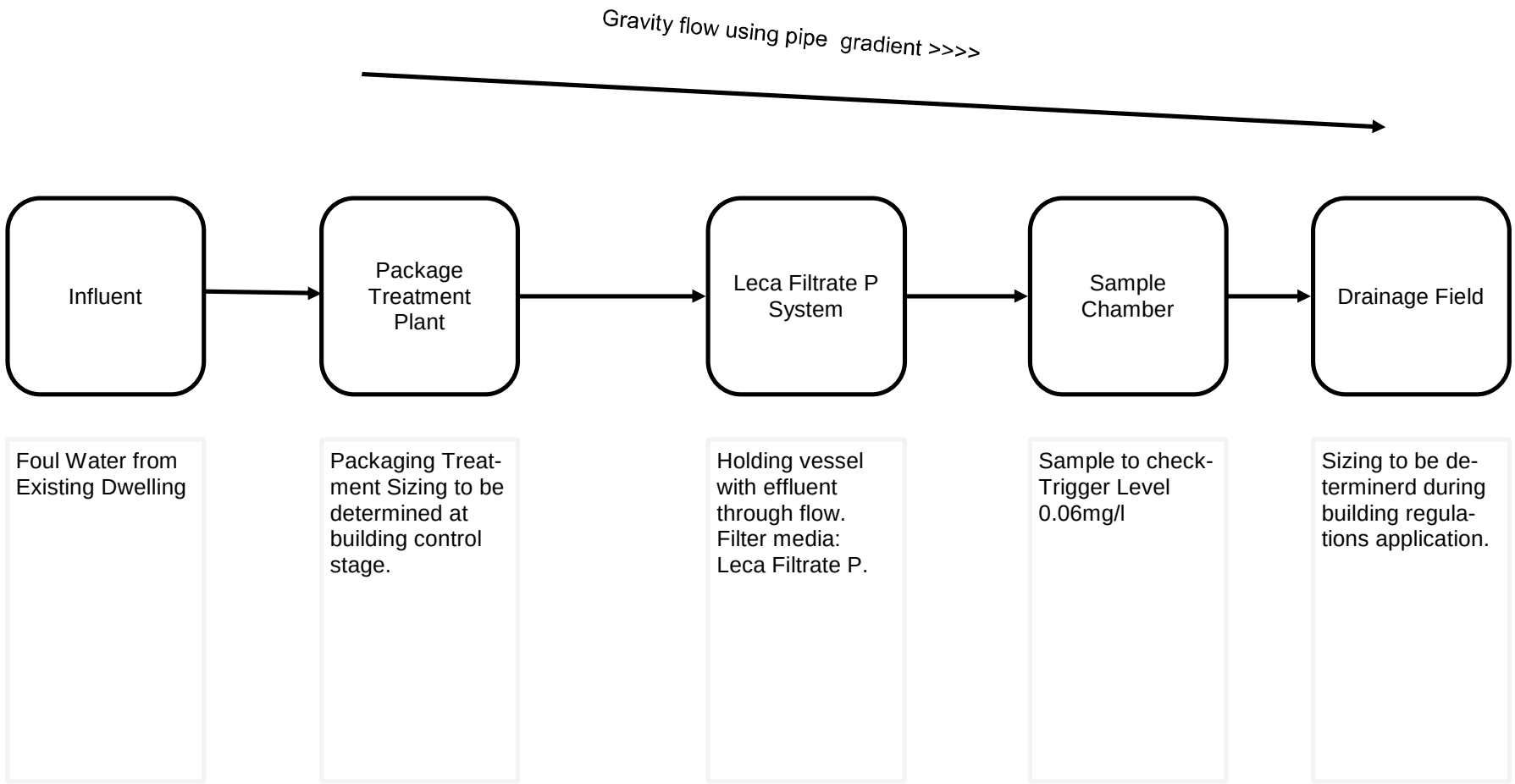


Appendix E

Proposed Drawings

Pinneywood - Conceptual Drainage Layout 1.1—NTS—PMCL No LAN1001735





Pinneywood —System Schematic —NTS

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Appendix F

Monitoring & Waste Disposal

Monitoring Requirements

The phosphate removal in the proposed system is achieved using Leca Filtralite P Filter Medium. The manufacture does not give a life span for this product, although it is estimated to be around 20 years in normal use. Therefore as a conservative measure we would propose annual monitoring for Phosphate which starts on the 3rd year after installation. The sampling should take place at the final discharge point (outfall to river or pond, or sampling chamber if soak-away). The sample should then be sent to a UKAS accredited laboratory and tested for total Phosphate. We have derived a **trigger level**, where by if Phosphate rises above the calculated figure below then the filter media will need to be replaced.

Trigger Level is **0.06** mg/l

Disposal of Used Filter Media

The used filter media will need to be disposed of after it has been removed from system, this can be achieved using a vacuume tanker. The disposal of the filter media to land as a fertiliser is thought a suitable route, although this will need to be undertaken as part of a balanced nutrient management plan under RB209, or disposed of to landfill. As with all sewage born filter media consideration should be given to the presence of micro plastics, within spents filter media.