

1st September 2023

Project No: 313887

Drainage Assessment: Proposed Agricultural Building, Upper Califer, Forres IV36 2RN

Prepared for:

Mr A Lawson

Upper Califer

Forres

IV36 2RN

Contents Amendment Record

This report has been issued and amended as follows:

Revision	Description	Date	Signed
1.0	First Issue	6 February 2024	G Mackintosh



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Acknowledgement

This report has been prepared for the sole and exclusive use of Mr A Lawson in accordance with the scope of work presented by Mabbett & Associates Ltd (Mabbett) via email dated 15th January 2024. This report is based on information and data collected by Mabbett. Should any of the information be incorrect, incomplete or subject to change, Mabbett may wish to revise the report accordingly.

This report has been prepared by the following Mabbett personnel:

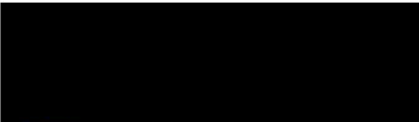
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Gary Mackintosh BSc
Principal Engineer

This report has been reviewed and approved by the following Mabbett personnel:

MABBETT & ASSOCIATES LTD



James Forbes, CEng, CEnv, CWEM, MCIWEM
Director, Engineering

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Section 1.0 Introduction

Mabbett & Associates Ltd (Mabbett) was commissioned by Mr Stafford Turnidge to undertake an assessment of the surface water management options for a proposed new dwelling to be located within land adjacent to Station Road, Burghead.

1.1 Introduction to Surface Water Treatment

With regard to surface water treatment and dispersal, Regulation 3.6 of the Building (Scotland) Regulations 2004, as reproduced below, states that:

Every building and hard surface within the curtilage of a building, must be designed and constructed with a surface water drainage system that will:

- (a) ensure the disposal of surface water without threatening the building and the health and safety of the people in and around the building; and*
- (b) have facilities for the separation and removal of silt, grit and pollutants.*

Section 3.6.3 of the Technical Handbook provides methods of discharging surface water that, if employed, would meet the requirements of the authorities.

With regard to SEPA's requirements, General Binding Rule (GBR) 10, in pursuance of the Water Environment (Controlled Activities) (Scotland) Regulations 2011, states that the provision of a sustainable urban drainage system (SUDS) is required unless the discharge arises from a single house or if the discharge is to be made to coastal waters. GBR10 and the relevant associated rule is outlined overleaf.

SEPA and Building Regulations require that infiltration systems (soakaways) are located at least:

- 50m from any spring, well or borehole used as drinking water supply
- 10m horizontally from any water course and any inland and coastal waters, permeable drain (including culvert), road or railway
- 5m from a building or boundary

Section 2.0 Site Information and Ground Conditions

2.1 Existing Ground Conditions

A site visit was carried out on 17th January 2024 to assess the existing soils and their suitability for the use of sub surface soakaways as a method surface water management.

The existing soils consist of 300 Topsoil dense rock with some occasional sands.

There was no evidence of contamination or water table present within the trial pits and the natural soils have a minimum allowable bearing capacity in excess of 100kn/m².

During the site visit, the drainage arrangement for the existing buildings and surrounding land was discussed. The buildings currently discharge to a 225mm diam pvc pipe located the north of the proposed building. The pipe flows from east to west, entering a drainage ditch to the northwest of the site area.

2.2 Flood Risk

The SEPA Flood Maps have been consulted which indicate that the site area lies out with any areas of potential fluvial and pluvial flooding during a 1 in 200year event therefore the property is considered to be at low risk.

2.3 Infiltration Testing

Infiltration testing was abandoned due to the rock encountered immediately beneath the topsoil layer.

Section 3.0 Surface Water

3.1 Minimum System Requirements

In pursuit of compliance with Regulation 3.6 of the Building (Scotland) Regulations 2004, Section 3.6.3 of the Technical Handbook provides methods of discharging surface water that, if employed, would meet the requirements:

- (a) a SUD system designed and constructed in accordance with clause 3.6.4;
- (b) a soakaway constructed in accordance with:
 - ♣ clause 3.6.5;
 - ♣ the guidance in BRE Digest 365, 'Soakaway Design', or
 - ♣ National Annex NG 2 of BS EN 752-4: 1998;
- (c) A public sewer provided under the Sewerage (Scotland) Act 1968;
- (d) An outfall to a watercourse, such as a river, stream or loch or coastal waters, that complies with any notice and/or consent by SEPA, or
- (e) If the surface water is from a dwelling, to a storage container with an overflow discharging to either of the 4 options above.

The area to be drained consists of the roof of the dwelling and associated hardstandings.

3.2 Recommendation - Surface Water

Mabbett recommends that the surface water runoff from the new agricultural building connects to the existing 225mm pipe discharging to the drainage ditch located to the northwest of the site as indicated within Appendix 1.

Prior to connection, it is required to attenuate the flows to a pre development runoff rate and provide adequate storage to manage flows up to a 1:30year event with 42% allowance for climate change.

The Moray Council Flood Risk Management policy includes a preference for above ground storage or for the drainage system to be incorporated in to the blue/green network of any proposed development.

The area surrounding the proposed site is to be used primarily for grazing and therefore any above ground storage would be liable to damage/blockage through animal movement. It is therefore proposed in this instance that the storage be provided below ground.

It is therefore proposed to install a stonefilled attenuation bed sized to manage flows up to a 1:30year event with 42% climate change. The attenuation bed will limit flows to 0.5l/s via a control manhole, prior to connection to the existing drainage system.

Please see the calculations within Appendix 2 detailing the requirement for **13.3m³** storage to be provided based on a contributing area of 360m² (new roof area with extra over).

Assuming 30% storage available within the stone filled attenuation, the required storage sizing can be shown as:

$$13.0\text{m} \times 3.5\text{m} \times 1.00\text{m} \times 0.3 = \underline{\underline{13.65\text{m}^3}}$$

Storage details have been included within Appendix 3.

Section 4.0 Disclaimer

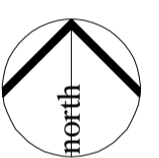
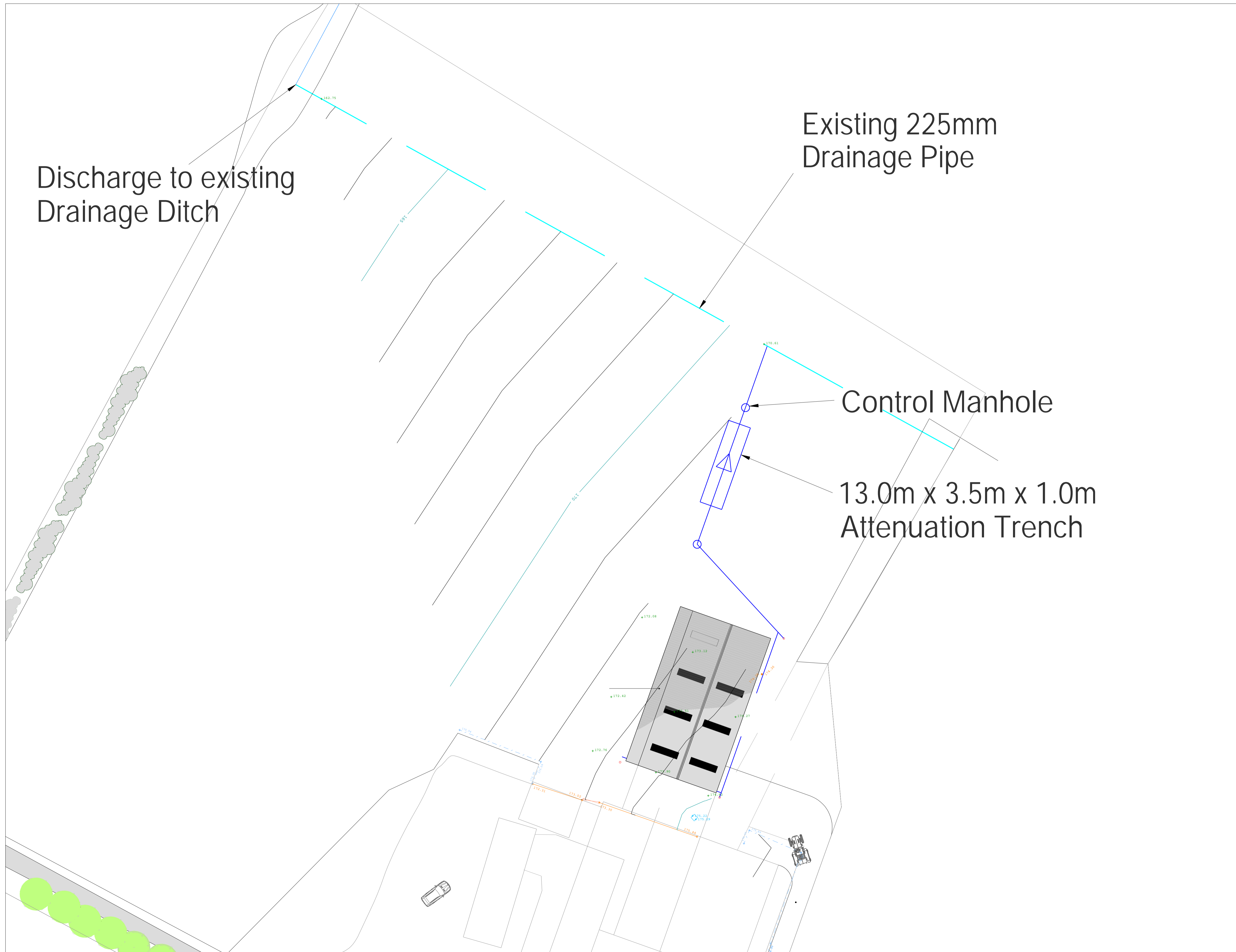
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Section 5.0 References

Building (Scotland) Regulations 2004

The Scottish Building Standards: Technical Handbook 2019: Domestic

Appendix 1: Site Plan and Approximate Test Hole Location



Rev.	Description	Drawn	Date
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Willow House
Stoneyfield Business Park
Inverness IV2 7PA
Tel: 01463 237229
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Client
Mr A Lawson

Project
Proposed Agri Shed
Upper Califer
Forres

Drawing
Site Plan
Drainage Proposals

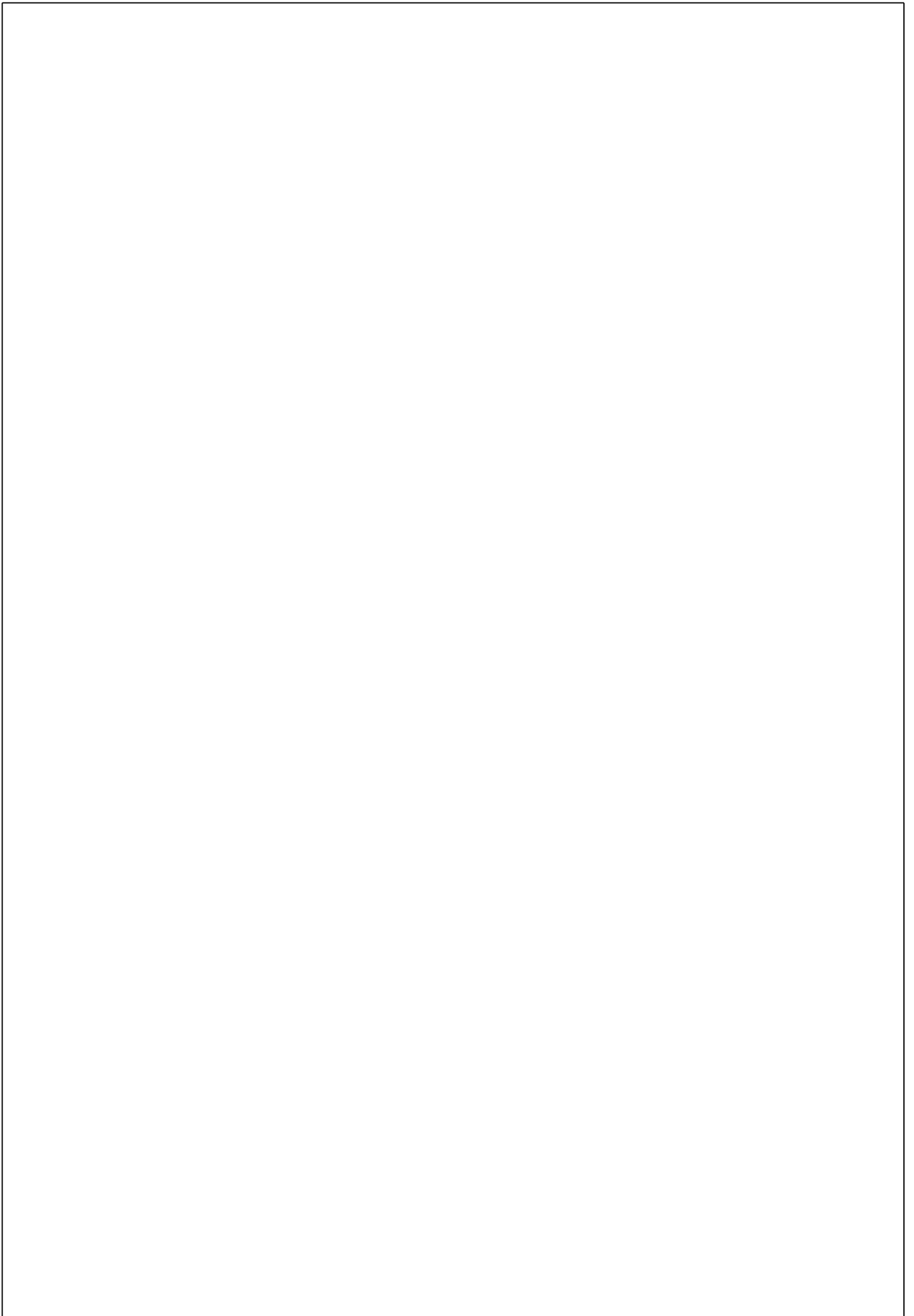
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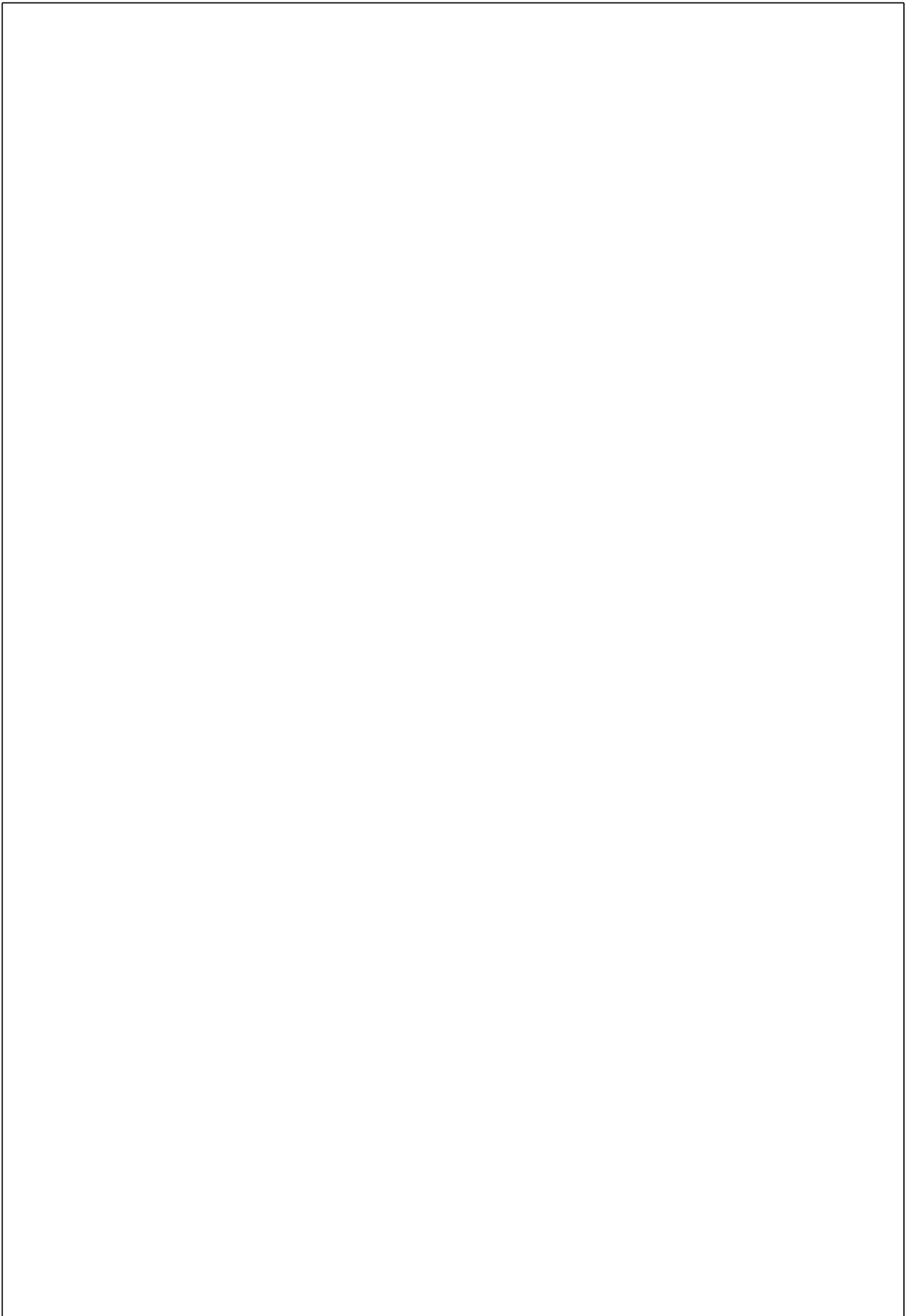
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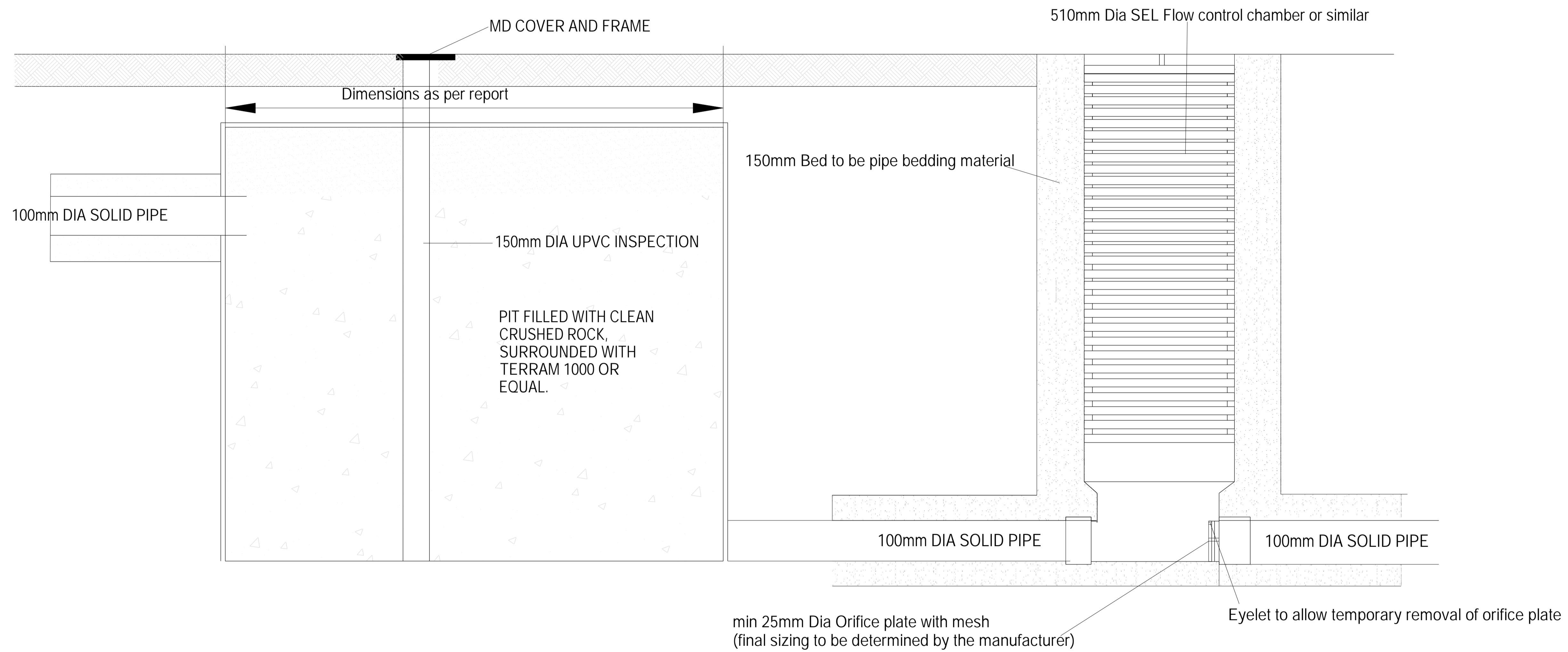
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Appendix 2: Surface Water Storage Calculations

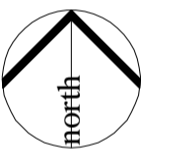




Appendix 3: Surface Water Storage Details



LONGITUDINAL SECTION THROUGH ATTENUATION/FILTER BED



Rev.	Description	Drawn	Date
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Client
 Mr A Lawson

Project
 Proposed Agri Shed
 Upper Califer
 Forres

Drawing
 Attenuation Trench
 Construction Details

Status
 Issue

Scale NTS Sheet A1

Drawn SP Check GM Date 6/2/24

Drawing No: 314626 SU002 Rev X