

Appendix I – Sequential Test

Sequential Test

Lidl Lampeter

Presented to: Lidl

Issued: September 2024

Lucion Contract Reference: 119796.642269

Report Details

Client	Lidl
Report Title	Sequential Test
Site Address	Land off Cwmann Terrace, Cwmann, Lampeter SA48 8DR
Contract Reference	119796.642269
Lucion Contact	Luke.bland@luciongroup.com

About Us

Lucion Delta-Simons is part of Lucion, a technology-led environmental services company dedicated to protecting people and the planet. With expert advice, guidance, and a comprehensive array of services, we support you at every stage of your asset lifecycle, helping you mitigate regulatory impact, improve business practices, and ensure safety and environmental protection.

As part of Lucion's group of companies, we can support you with a broader range of holistic services. Through our pool of multidisciplinary experts, we help you navigate complex regulatory frameworks, saving you time and money.

Being part of your sustainable supply chain is a key goal for our team. As a member of the UN Global Compact and a commitment to sustainability, we are the partner of choice for businesses looking to make informed decisions and mitigate risks across your portfolio.

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1.0 Introduction

1.1 Purpose

The aim of this Sequential Test, is to align with 6.2 of the TAN15 guidance which states '*new development should be steered away from Zone C*'. All other new development should only be permitted within zones C1 and C2 if determined by the planning authority to be justified in that location.

This report presents the findings of the application of the Sequential Test to inform selection of the Proposed Development which makes provision for a new food store and associated parking.

1.2 Scope

This Sequential Test builds on the wider project sequential test undertaken by CarneySweeny and includes flood risk as part of the Flood Consequence Assessment (FCA) process in support of planning application for the Proposed Development. The current proposed option (hereinafter referred to as the "Application Site") is compared with other options considered for the delivery of the Proposed Development within a defined search area to determine whether there are any alternative development options in areas of lower flood risk which are reasonably available.

In order to undertake the Sequential Test, the following stages were carried out:

- Established the present status of the Application Site with respect to flood risk and the vulnerability of the Proposed Scheme to flood risk in line with TAN15; and
- Applied the Sequential Test to the list of potential sites identified by CarneySweeny in August 2024.

2.0 Approach

2.1 Application Site Flood Zone

A review of the Natural Resource Wales (NRW) Development Advice Map (DAM) shows that the Application Site is located within Zone C2 (Areas of the floodplain without significant flood defence infrastructure). The Application Site is also located within Flood Zones 3 and 2 associated with river flooding. Flood Zone 3 is land classified as having a 1 in 100 (1% Annual Exceedance Probability (AEP)) or greater annual probability of river flooding, and Flood Zone 2 is land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1% AEP).

2.2 Development Vulnerability

The Proposed Development is classified as 'Less Vulnerable' as depicted in Figure 2 within TAN15.

2.3 Methodology

The Sequential Test required by the TAN15 is a process by which the precautionary principle is applied to the strategic land allocation process and the assessment of sites proposed for developments in areas susceptible to flooding. Planning Policy Wales requires planning authorities to review flood risk across their administrative areas, steering all development towards areas of lowest risk.

Whilst the Proposed Development is not part of the Local Plan making process, the principles of the Sequential Test still apply with respect to it being 'new development' located in an area of flood risk. Therefore, the Sequential Test requires the identification of sites which may be available and appropriate for the Proposed Development where the risk of flooding is variable. The risk of flooding to each site is then assessed and the preferred site should be at lowest risk of flooding unless it can be shown that sites in areas of lower flood risk are not reasonably available.

2.4 Search Area

The assessment is based on research undertaken by CarneySweeny, including site visits to other competing retail destinations and relevant centres within the catchment area in August 2024. This process has included:

- an analysis of adopted development plan policy documents; and
- a review of potential town centre and edge-of-centre sites/units.

The sequential assessment focusses on the following:

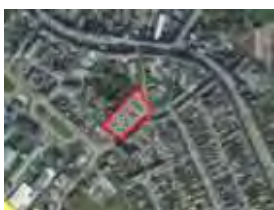
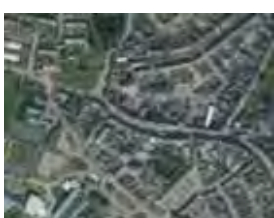
- Lampeter Town Centre and Edge of Centre Sites
- Llanybydder District Centre and Edge of Centre Sites
- Tregaron Urban Service Centre and Edge of Centre Sites

3.0 Site Assessment#

The table below presents a review of the nine identified sites in relation to the following criteria:

- Flood Risk
- Size of the Site
- Availability of the Site

For the Sequential Test, a higher risk of flooding is defined as having part of the site located within Zone C2 or Flood Zone 3 or a greater amount of the site located within the floodplain. It should be noted that whilst all sources of flooding have been considered, fluvial is the principal issue for this development (level of risk from other sources is similar as referenced in the FCA) and is therefore primarily considered within this assessment.

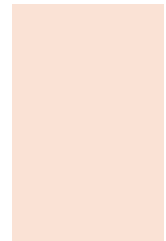
Option	Flood Risk	Review	Discounted/R etained
Application Site Land off Cwmann Terrace, Cwmann, Lampeter SA48 8DR	DAM – Zone C2 Flood Zone 2 and 3 	• Provides adequate space for the store, target parking spaces and HGV manoeuvrability • Safe access and egress is achievable in all flood risk scenarios • Site is available for development now • High probability of experiencing flooding • Partial previously developed land	Retained
Site 1 - <i>Ceredigion Car Park (and Open Market), Peterwell Terrace (In Centre)</i>	DAM – Zone A Flood Zones 1 	• The site measures a total 0.3ha which is too small for the store and associated parking • The site operates as Ceredigion Council car park and forms an important function for Lampeter town centre. • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Previously developed land • The site is not being actively marketed and not available for the proposed development (within a reasonable time-period)	Discounted
Site 2 - <i>Ceredigion Car Park (Mount Walk (Edge of Centre)</i>	DAM – Zone A Flood Zones 1 	• The site measures a total 0.04ha which is too small for the store and associated parking • The site operates as Ceredigion Council car park and forms an important function for Lampeter town centre. • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Previously developed land • The site is not being actively marketed and not available for the proposed development (within a reasonable time-period)	Discounted
Site 3 - <i>Lampeter Town Centre Vacant Units</i>	DAM – Zone A Flood Zones 1 	• 11 individual units all of which are substantially smaller than the required minimum size of 0.6ha for the food store and associated parking • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Previously developed land	Discounted

Site 4 - Land to the South of Pontbraen Road, University of Trinity College playing fields	DAM – Zone 1 Flood Zone 1	 • Aldi currently have a live planning application for this site • Provides adequate space for the store, target parking spaces and HGV manoeuvrability • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Not previously developed land • Current application currently has a recommendation for refusal due to adverse impact on characteristics of landscape, grade II listed pavilion on site and character and appearance of Lampeter Conservation Area	Discounted
Site 5 - Llanbydder Centre Vacant Units	DAM – Zone 1 Flood Zone 1	 • The site measures a total 0.04ha which is far too small for the store and associated parking • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Previously developed land	Discounted
Site 6 - Land adjacent to Cross Hands Hotel	DAM – Zone 1 Flood Zone 1	 • The site measures a total 0.07ha which is far too small for the store and associated parking • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Previously developed land	Discounted
Site 7 - The Old Foundry (LDP Allocation T3/11/E1)	DAM – Zone 1 Flood Zone 1	 • The site measures a total 0.5ha which is too small for the store and associated parking • The site does not have the commercial prominence to sustain a main food store • the site is allocated for employment development under Policy SP7 in the adopted LDP (and Policy EME3 in the emerging LDP • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Previously developed land	Discounted
Site 8 - Tregaron Centre Vacant Units	DAM – Zone C2 Flood Zone 2 and 3	 • The two units measures a total 0.01ha and 0.02ha which is far too small for the store and associated parking • Safe access and egress is not likely achievable in all flood risk scenarios • High probability of experiencing flooding • Previously developed land	Discounted
Site 9 - Land to the rear of Talbot Yard, Cylch Caron, Dewi Road, Tregaron (LDP	DAM – Zone 1 Flood Zone 1	• Provides adequate space for the store, target parking spaces and HGV manoeuvrability • Unlikely to experience flooding therefore more preferential from a flood risk perspective • Outline planning permission was granted on the for Class D1, C2 and C3 uses in 2016, with reserved matter as approved in 2020 on the northern extent of the parcel for	Discounted

Allocation
M0701 and
H0701)



Class D1 and C2 uses. The allocation/site is therefore not available as an alternative to the application site.



4.0 Conclusions/Recommendations

The Sequential Test has been applied to the Proposed Development of a new food store and associated car parking facilities. Alternative options and sites identified within the CarneySweeny Sequential Search were then reviewed according to the risk of flooding, size and availability of a Site.

Through this assessment it is clear that most sites assessed have a lower probability of flooding however the overall size of the Sites are such that it would not be possible to locate the proposed food store and associated parking.

The Application Site is considered to comply with the requirements of the Sequential Test in the absence of available, appropriate alternative sites with a lower risk of flooding.

Appendix J – Detailed Drainage Strategy

Detailed Drainage Strategy

Lidl Lampeter



Presented to: Lidl Great Britain Limited

Issued: April 2025

Lucion Contract Reference: 119796.642269

Report Details

Client	Lidl Great Britain Limited
Report Title	Detailed Drainage Strategy
Site Address	Land south of the A482 and west of the A485, Cwmann, Lampeter, SA48 8JN
Contract Reference	119796.642269
Lucion Contact	Luke Bland (luke.bland@luciongroup.com)

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
3	Final	2 nd April 2025	Foul drainage strategy changed to discharge to public sewer. SW drainage updated.	Alexander Rea Consultant Cameron Leighton Consultant	Toby Bass Senior	Peter Allan Associate Luke Bland Principal

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1.0 Introduction

1.1 Appointment

- 1.1.1 Lucion Delta-Simons Ltd (“Lucion”) was instructed by Lidl Great Britain Limited (the “Client”) to produce a Detailed Drainage Strategy (DDS) for a proposed supermarket situated on the land south of the A482 and west of the A485, Cwmann, Lampeter, SA48 8JN (the “Site”).

1.2 Project Understanding

- 1.2.1 Legislation (introduced with Schedule 3 of the Flood & Water Management Act) in Wales requires new development measuring in excess of 100 m² to have Sustainable Drainage Systems (SuDS) approval by the SuDS Approval Body (SAB) in conjunction with the planning process. Therefore, the client has requested that a Drainage Strategy is produced, which will provide an appropriate consideration of Sustainable Drainage Systems (SuDS) in line with CIRIA SuDS (C753) Guidance to ensure that surface water flood risk is not exacerbated on or off site as a result of the proposed development.
- 1.2.2 The proposed development will increase the Site’s impermeable area, which could increase the risk of flooding to downstream receptors. Therefore, a Drainage Strategy with appropriate consideration for Sustainable Drainage Systems (SuDS) in line with CIRIA SuDS (C753) Guidance is required.
- 1.2.3 Carmarthenshire County Council as Lead Local Flood Authority (LLFA) is a statutory consultee for major planning applications in relation to surface water drainage, requiring that all planning applications are accompanied by a Sustainable Drainage Strategy. The aim of the Sustainable Drainage Strategy is to identify water management measures, including Sustainable Drainage Systems (SuDS), to provide surface water runoff reduction and treatment.
- 1.2.4 Location details of the proposal are detailed below:
- Land south of the A482 and west of the A485, Cwmann, Lampeter, SA48 8JN.
 - National Grid Reference: Eastings 258270 Northings 247350.
- 1.2.5 The purpose of this report is to provide a strategy to manage surface and foul water flows from the Site, in support of the planning application, while fulfilling the requirements of the Local Planning Authority (LPA) and the Lead Local Flood Authority (LLFA).

1.3 Project Limitations

- 1.3.1 The wider Lucion limitations are contained within Appendix A.

2.0 Relevant Planning Policy and Guidance

2.1 Introduction

- 2.1.1 The aim of this section of the report is to discuss the main aspects of the local and national planning policies that are relevant to any proposed development on the Site and relevant guidance and legislation.

2.2 Planning Policy

- 2.2.1 As discussed above, legislation (introduced with Schedule 3 of the Flood & Water Management Act) in Wales requires new development measuring in excess of 100 m² to have Sustainable Drainage Systems (SuDS) approval by the SuDS Approval Body (SAB) in conjunction with the planning process. As such the Site is therefore required to manage surface water generated as a result of the development, sustainably and in line with CIRIA SuDS (C753) Guidance.

2.3 Local Policy

- 2.3.1 The Carmarthenshire County Council Local Development Plan contains the following policies relating to flood risk and drainage.

Strategic Policy – SP 16: Climate Change

Avoid, or where appropriate, minimise the risk of flooding including the incorporation of measures (such as SuDS and flood resilient design);

Development proposals which are located within areas at risk from flooding will not be permitted unless they accord with the provisions of Planning Policy Wales TAN 15.

The potential impact of flood risk forms an important consideration in the assessment of the appropriateness of sites for inclusion within the LDP. In this regard, a precautionary approach will be adopted in the identification of sites for inclusion in the Plan. The consideration of any proposals in respect of flooding have regard to the provisions of PPW and TAN15: Development and Flood Risk which provides guidance on assessing developments at risk from flooding.

Proposals affected by flood risk will be required to submit a Flood Consequences Assessment as part of any planning application and the Council will consult with Natural Resources Wales (NRW). Where a site is in part impacted upon by flood risk, the developer will need to consider the impact of the risk on the developability of the remainder of the site. Where appropriate they should undertake the necessary evidential work (including a flood consequences assessment) to the satisfaction of NRW. Only less vulnerable development will be permitted within Zone C2. Regard should be had to Policy CCH4: Flood Risk Management and Avoidance as contained within this Plan.

CCH4: Water Quality and Protection of Water Resources

- 2.3.2 *Development proposals must make efficient use of water resources and, where appropriate, contribute towards improvements in water quality. Proposals will be permitted where they do not have an adverse effect upon water resources, water quality, fisheries, nature conservation, public access, or water related recreation use in the County.*
- 2.3.3 *Where appropriate, SuDS must be implemented with approval required through the Sustainable Drainage Approval Body (SAB).*
- 2.3.4 *Proposals will be supported if they promote the safeguarding of watercourses through ecological buffer zones or corridors, protecting aspects such as riparian habitats and species, water quality, and providing for flood plain capacity.*

- 2.3.5 *Development will only be permitted if it can be demonstrated that there is no adverse effect on the integrity of phosphorus sensitive riverine Special Areas of Conservation (SACs). In the hydrological catchment area designated for riverine SACs, development creating wastewater discharges will be required to demonstrate there is no increase in phosphorus levels in the SAC. This can be achieved through implementation of mitigation measures and associated supplementary planning guidance. Where evidence demonstrates that adverse effects on the integrity of river SAC can be avoided or offset using mitigation, these must be agreed with the Council on a case-by-case basis, in consultation with NRW.*

2.4 Planning Policy in Site Context

- 2.4.1 The existing Site covers 0.16 ha of brownfield land and is shown to be located within Flood Zone C2 (an area without significant flood defence infrastructure) on the Development Advice Map and Defended Flood Zone 3 (High Probability) on the NRW Flood Map for Planning.

2.5 Consultation

- 2.5.1 A pre-application consultation was submitted to NRW on the 30th of October 2024. A response was received on the 20th of November 2024 and the relevant comments are outlined below;

Foul Drainage

- 2.5.2 *We note the application site is within the catchment of the River Teifi Special Area of Conservation (SAC). In line with our Advice to Planning Authorities for Planning Applications Affecting Nutrient Sensitive River Special Areas of Conservation (28 June 2024), under the Habitats Regulations, Planning Authorities must consider the impact of proposed developments on water quality within SAC river catchments. We therefore advise you to consider whether the proposals, as submitted, would increase the volume of foul discharge from the site in planning terms.*
- 2.5.3 *We note foul water disposal is proposed via the installation of a package treatment plant, rather than connecting to the mains sewer. However, according to our records, the site is within a sewered area.*
- 2.5.4 *The installation of private sewage treatment facilities within publicly sewered areas is not normally considered environmentally acceptable because of the greater risk of failures leading to pollution of the water environment compared to public sewerage systems.*
- 2.5.5 *Section 6.6.21 of Planning Policy Wales (2001) states ‘Any development discharging domestic sewage should connect to the foul sewer where it is reasonable to do so. Development proposing the use of non-mains drainage schemes will only be considered acceptable where connection to the main sewer is not feasible...’*
- 2.5.6 *Government guidance on private sewerage in Welsh Government Circular 008/2018 stresses the first presumption must be to provide a system of foul drainage discharging into a public sewer. Only where having taken into account the cost and/or practicability it can be shown to the satisfaction of the Local Planning Authority that connection to a public sewer is not feasible, should non-mains foul sewage disposal solutions be considered.*
- 2.5.7 *Therefore, we advise proposals are amended to ensure the foul drainage is connected to the mains sewerage system or detailed evidence is provided to demonstrate it is not reasonable to connect.*
- 2.5.8 *You should thoroughly investigate the possibility of connecting to the foul sewer by taking the following steps:*
- *Formally approach the sewerage undertaker regarding a connection under Section 106 or a requisition under Section 98 of the Water Industry Act (WIA) 1991;*
 - *Serve notice for connection under Section 106 of the WIA 1991 if the sewerage undertaker has refused connection;*
 - *Provide details of the reasons given by the sewerage undertaker if it has refused connection under section 98 or section 106 of the WIA 1991 and confirmation they have appealed against this decision;*
 - *Demonstrate it is not reasonable to connect to the public foul sewer;*

- 2.5.9 *Where it is not reasonable to connect to the public foul sewer, demonstrate they have considered requesting that the sewerage undertaker adopt their proposed system.*
- 2.5.10 *You should be aware that should a connection to the mains sewer not be feasible, you will also need to demonstrate the proposal would not pose an unacceptable risk to the water environment. Welsh Government Circular 008/2018 advises a full and detailed consideration be given to the environmental criteria listed under paragraph 2.6 of the Circular, in order to justify the use of private sewerage.*
- 2.5.11 *Furthermore, we refer you to the section in our Advice titled 'What does this mean for development proposals involving connection to public wastewater treatment works'.*
- 2.5.12 Comments were also provided by Welsh Water with the relevant comments outlined below;

Public Sewerage Network

- 2.5.13 *Dŵr Cymru advises that the Waste water Treatment Works (WwTW) has a phosphorus consent in place.*
- 2.5.14 *There is currently suitable hydraulic capacity in the public sewerage system and downstream of the WwTW's to accommodate foul water flows from the development subject of this application.*

Surface Water Drainage

- 2.5.15 *Dŵr Cymru recommends that Ceredigion County Council is consulted in relation to the proposals for SuDS features as they are the SuDS Approval Body (SAB).*

Foul Water Drainage – Sewerage Network

- 2.5.16 *Dŵr Cymru have considered the impact of foul flows generated by the proposed development and concluded that flows can be accommodated within the public sewerage system.*
- 2.5.17 *Dŵr Cymru advises that the flows should be connected to the 150mm combined sewer at manhole SN58472301.*

Sewerage Treatment

- 2.5.18 *The proposed development would drain to Lampeter Waste water Treatment Works which is currently failing to comply with the 95% quartile for its flow passed forward (FPF) performance.*
- 2.5.19 *No buildings on the application site shall be brought into beneficial use earlier than 31st December 2025, unless the scheme at the Waste Water Treatment Works, into which the development shall drain, has been completed and written confirmation of this has been issued by the Local Planning Authority.*

Water Supply

- 2.5.20 *Dŵr Cymru anticipate that the development will require the installation of a new single water connection to serve the new premise. They will rely on the LPA to control the delivery of any required reinforcement or offsite works by way of planning condition at the planning application stage. Capacity is currently available in the water supply system to accommodate the development.*

3.0 Site Description

3.1 Site Plan

- 3.1.1 The Site is located between the towns of Lampeter and Cwmann, approximately 860 m southeast from Lampeter Town Centre. It covers an area of approximately 14,600 m².

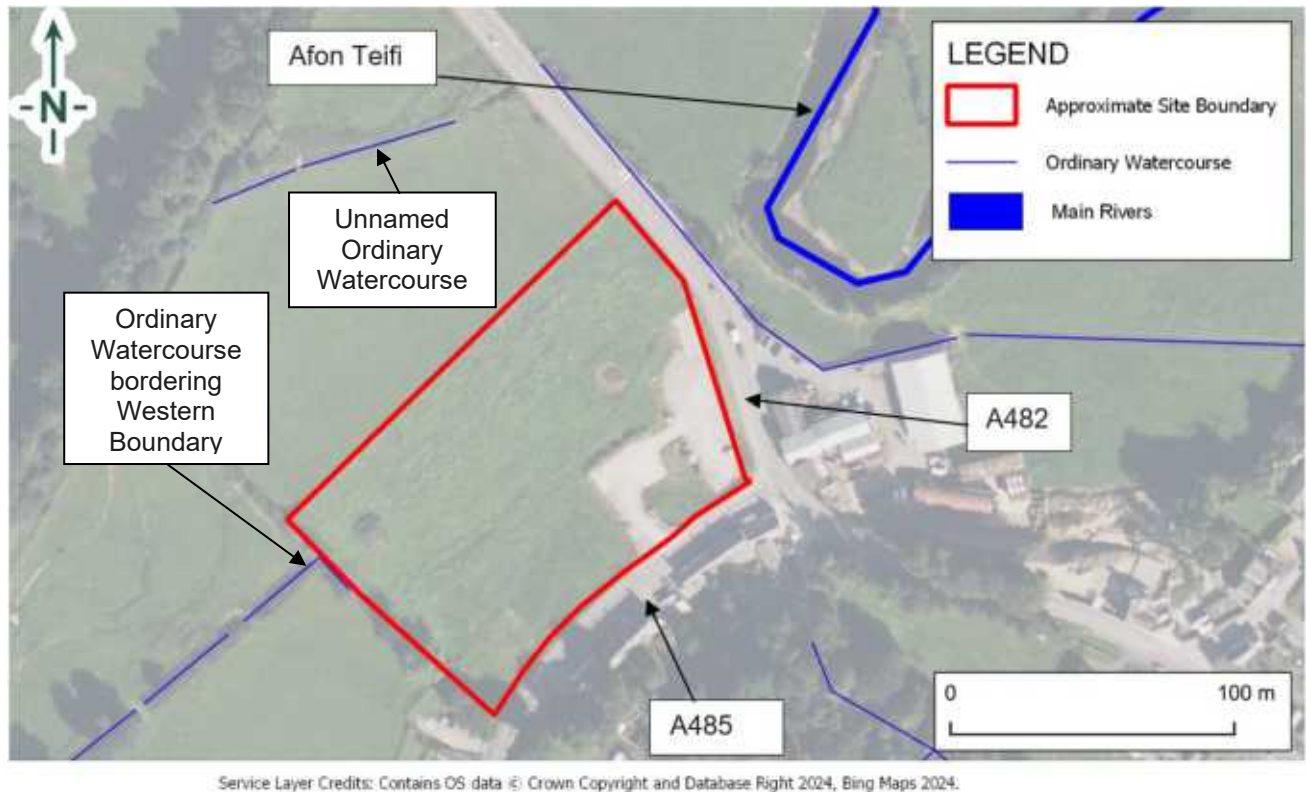


Figure 1: Site Location Plan

- 3.1.2 Online mapping (including Google Maps/Google Streetview imagery, accessed October 2024) shows that the Site is a mix of greenfield land and previously developed brownfield land. Access to the Site is provided from the A485 to the south of the Site. The Site is bordered by:

- Fields of grass to the north, west and southwest;
- The A482 to the east and northeast, beyond which is the Afon Teifi to the northeast and assorted shops, businesses and residential dwellings to the east; and
- The A485, beyond which are residential properties to the south.

- 3.1.3 Hardstanding areas on Site currently occupy 1,684 m² or 12% of the total Site area. The remaining permeable, soft landscaped areas occupy 12,916 m² or 88% of the total Site area. This information has been measured from a topographic survey undertaken by EMP Surveys Ltd in August 2024 which is included in Appendix B.

3.2 Development Description

- 3.2.1 The proposed development is for a supermarket unit in the southeast of the Site with associated access and parking in the north. Proposed development plans are included in Appendix C.
- 3.2.2 The EMP Surveys Ltd topographical survey shows that the Site slopes from 115.92 metres Above Ordnance Datum (m AOD) at the entrance to the Site from the A485 to 113.09 m AOD in the northwestern corner of the Site.

3.2.3 The proposed development hardstanding areas are split as follows:

- Proposed Roof Area is 2,042 m² (14% of the Site);
- Proposed access road and parking areas comprise 5,639 m² (39% of the Site); and
- Greenspaces comprise 6,919 m² (47% of the Site).

3.2.4 Proposed hardstanding areas have been measured from development plans. Existing and proposed hardstanding and soft landscaped areas drawing are included as Appendix D.

3.3 Permeability and Soil Profile

3.3.1 Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the Site is underlain by superficial deposits of Alluvium generally comprising gravel, sand, silt and clay. The superficial deposits are identified as being underlain by Devils Bridge Formation bedrock, consisting of mudstone and sandstone, interbedded.

3.3.2 Soils mapping, accessed October 2024, indicates that the Site is situated upon on freely draining floodplain soils.

3.3.3 According to the NRW's Aquifer Designation data, obtained from MAGIC Map's online mapping, accessed October 2024, the Alluvium is classified as a Secondary A Aquifer. The underlying Devils Bridge Formation is described as a Secondary B Aquifer.

3.4 Current Foul and Surface Water Drainage Provision

Existing watercourses

3.4.1 The closest watercourse is an Ordinary Watercourse located along the western boundary of the Site. The watercourse then discharges into the Afon Teifi approximately 300 m southwest of the Site.

3.4.2 The Afon Teifi is a Main River (jurisdiction of NRW) which meanders around the Site to the northeast, north, northwest and west. At its closest point, the river flows within approximately 30 m of the Site to the northwest. The river flows in a south-westerly direction.

3.4.3 In addition to this, there is an unnamed watercourse which is located approximately 12 m north of the Site. This unnamed watercourse joins the Afon Teifi approximately 210 m northwest of the Site.

Existing sewers

3.4.4 Utilities in the area surrounding the Site have been surveyed and/or located from asset records and are shown on the topographic survey by EMP Surveys Ltd within Appendix B. The sewer plans show that there is a 225 – 300 mm diameter surface water sewer located approximately 2 m northeast of the Site in the raised A482 (compared to the lower northern extent of the Site) which drains in a northwest direction. The invert level of the surface water sewer at the northeast corner of the Site (MH 06 SW) is recorded as having a 114.74 m AOD cover level and an invert level of 113.59 m AOD.

3.4.5 There are also two blocked surface water manholes in the Site entrance to the southeast, bordering the A485. The downstream manhole records an invert level of 113.61 m AOD.

3.4.6 There are a series of highway drains and gullies along the A485, the full extent of which has not been shown on the survey. Due to the limited information, it is not clear what is currently in use or where it drains.

4.0 Drainage Strategy

4.1 Drainage Hierarchy

4.1.1 The aim of the strategy is to provide a design which will avoid, reduce, and delay the discharge of surface water flows into public sewers and watercourses. This will mitigate the effect of increasing the Site's impermeable drained area and ensure that flood Risk on and off-Site is not exacerbated as a result of the development.

4.1.2 Standard S1 of the Welsh Government: 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems' (2018) (referred to as "the statutory standards" henceforth) sets out the following hierarchy of drainage options:

4.1.3 Hierarchy options:

- Priority Level 1: Surface water runoff is collected for use;
- Priority Level 2: Surface water runoff is infiltrated to ground;
- Priority Level 3: Surface water runoff is discharged to a surface water body;
- Priority Level 4: Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system; and
- Priority Level 5: Surface water runoff is discharged to a combined sewer.

4.1.4 The drainage strategy for the site is to be developed using Priority level 3: discharge to a surface water body for the following reasons:

Priority Level 1: Surface Water Collected for Use

4.1.5 It must be noted that section G1.6 of the statutory standards states that; *"in most cases, rainwater harvesting alone will not be adequate to deal with the site drainage and provision will be required for an overflow to a Level 2 or lower priority runoff destination."*

4.1.6 As downstream provision of attenuation storage will be required to accommodate for rainwater harvesting system overflows, rainwater harvesting is not considered a cost-effective solution for managing surface water runoff as a whole, beyond basic gardening operations.

4.1.7 In addition to this, there is limited use for rainwater collection at the Site, therefore rainwater collection has not been proposed at the Site.

Priority Level 2: Surface Water Discharge to Soakaway (Infiltration)

4.1.8 BGS online mapping indicates that the Site is underlain by gravel, sand, silt and clay, as well as deposits of mudstone and sandstone, interbedded.

4.1.9 As well as this, given that much of the Site is located within a floodplain and in close proximity to the Afon Teifi, groundwater levels are expected to be nearby the surface. Soilscape mapping records the soils as 'Freely draining floodplain soils' and details 'Groundwater tables are shallow'.

4.1.10 As such, the high groundwater levels are unlikely to be able to support a deep enough dry zone beneath an infiltrating SuDS feature to ensure infiltration remains effective. As such, this development site is not considered suitable for infiltration as the method for the disposal of surface water.

Priority Level 3: Surface Water Discharge to Watercourse

4.1.11 It is proposed to discharge surface water into the ordinary watercourse which forms the western boundary of the Site at the 1 in 1 year greenfield runoff rate of 2.3 l/s. Attenuation will also be provided on Site to accommodate storm events up to the design event (1 in 100 years plus 40 % climate change). The InfoDrainage calculations supporting the drainage strategy are included in Appendix F.

4.2 Greenfield Runoff Rates

- 4.2.1 Greenfield run off rates for the Site have been calculated using the ICP SuDS method and are shown in Table 1 below. The full greenfield runoff calculations, generated by InfoDrainage are located within Appendix F.

Table 1: Greenfield Runoff Rates

Return Period	Greenfield Runoff Rate (l/s)
1 in 1 year	2.3
QBar	2.7
1 in 30 year	5.2
1 in 100 year	6.8

- 4.2.2 It is proposed to limit discharge from the Site to 2.3 l/s, in line with the greenfield 1 in 1 year runoff rate for all events up to and including the design event (1 in 100 + 40% CC).

4.3 Sustainable Drainage Systems

- 4.3.1 Attenuation storage should be provided in the form of Sustainable Drainage Systems (SuDS) where practical. The following SuDS options have been considered:

Rainwater Harvesting

- 4.3.2 Based on the nature and scale of the proposed development, the benefits offered through the use of rainwater harvesting are not considered commensurate.

Green Roofs

- 4.3.3 The development proposals do not include for the provision of green roofs.

Soakaways

- 4.3.4 As described above, based on the low permeability of the underlying geology and the high groundwater levels associated with the floodplain of the nearby Afon Teifi, soakaways are considered unsuitable/impractical at the Site.

Water butts

- 4.3.5 Water butts have not been proposed as grey water will have limited use for the proposed development.

Porous/Permeable Paving

- 4.3.6 Permeable surfacing could be incorporated into the proposed car parking area. Storage would be provided within the sub-grade material prior to controlled released to the receiving watercourse. The amount of storage offered by permeable surfacing is subject to sub-grade depth and Site gradient. Given that some of the external areas may be at risk of fluvial flooding, permeable paving and the potential maintenance associated with any restoration is not considered commensurate to the benefits provided.

Swales, Detention Basins and Ponds/Wetlands

- 4.3.7 Sufficient space is available on Site to utilise a pond, basin or swale as an above ground attenuation feature. In order to facilitate gravity drainage, attenuation features should be located at the lower western extent of the Site. As such a detention basin has been proposed. The proposed drainage plan for the Site is included in Appendix E. The InfoDrainage calculations supporting the drainage strategy are included in Appendix F. Considering the flood risk in the lower areas of the Site, an open basin or pond would be easier to maintain and remediate after a flooding event compared to an underground solution. This makes it a more sustainable option for the Site's conditions.

Filter Drains

- 4.3.8 Filter drains are not considered efficient for the development due to the large extent of impermeable area.

Underground Geocellular Crate System

- 4.3.9 Storage could be provided within an underground geocellular crate system. Sufficient space for an underground tank could be provided under the proposed carparking area in the northeast of the Site. However, given the Site's potential flood risk, remediation of any below ground attenuation crates may be disproportionate to the benefits provided when other alternatives for attenuation are available.

4.4 Climate Change

- 4.4.1 The Welsh Government 2021 'Flood Consequence Assessments: Climate Change Allowances' guidance states that for a development within Wales, it should utilise the upper estimate for peak rainfall intensity if the design life is expected to exceed 50 years. The upper estimate equates to a 40% allowance for climate change.

4.5 Proposed Surface Water Drainage Strategy

- 4.5.1 The proposed Strategy is to discharge surface water from the Site at a restricted rate of 2.3 l/s for all events up to and including the 1 in 100 year + 40% Climate change event into the watercourse which forms the Site's western boundary.
- 4.5.2 In order to achieve this rate, attenuation storage will be provided in the form of a large pond in the western part of the Site. The InfoDrainage network calculations (included in Appendix F) show that the maximum resident volume in the pond is 917.12 m³ in the critical storm. 300 mm of freeboard is included within the design.
- 4.5.3 Surface water from the roof and parking areas will be collected with a network of pipes, manholes and gullies. These will drain via gravity into the pond. The pond will discharge via a Hydrobrake vortex flow control device (unit ref SHE-0066-2300-1450-2300) into a package pump station. There is a short section of rising main to a stilling chamber which discharges into the watercourse by gravity.
- 4.5.4 The proposed drainage plan for the Site is included in Appendix E.
- 4.5.5 Drainage Details are included in Appendix I.

4.6 Exceedance Routes

- 4.6.1 For rainfall events with a return period of more than 100 years, surface flooding of open spaces such as landscaped areas or car parks is acceptable for short periods, but the layout and landscaping of the site should aim to route water away from buildings and avoid creating hazards for access and egress routes.
- 4.6.2 The proposed surface water scheme allows for an exceedance route away from the access and egress road and towards the external landscaped areas and parking areas. Outfall manholes are also to be fitted with high level overflows to mitigate against the risk of surface water emerging onto the surface.

4.7 Percentage Impermeability (PIMP)

- 4.7.1 All impermeable areas are modelled as 100% PIMP. This will allow for sufficient capacity for all hardstanding areas to be positively drained.

4.8 Volumetric Runoff Coefficient (Cv)

- 4.8.1 CV values vary for summer and winter and account for water volumes which do not enter the drainage system i.e., that is lost through infiltration, depression storage, evaporation, initial wetting etc. Values of 1.0 for summer and 1.0 for winter have been utilised as a conservative approach.

4.9 Surface Water Quality

- 4.9.1 In the absence of statutory requirements and prescriptive standards, the simple index approach outlined in CIRIA C753 the SuDS Manual provides best industry practice for assessing the quality of surface water runoff.
- 4.9.2 Table 26.2 from The SuDS Manual has been utilised to determine pollutant hazard indices for the development type, as shown in Table 2.
- 4.9.3 The development is classed as a mix of 'Low' and 'Medium' risk land uses due to the presence of commercial roofs, moderately trafficked roads and delivery yards on Site.

Table 2: Pollution Hazard Indices (Extract from SuDS Manual)

Land Use Classification	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Other Roofs (typically commercial/industrial roofs)	Low	0.5	0.2	0.4
Moderately Trafficked Roads /Delivery Yards	Medium	0.7	0.6	0.7

- 4.9.4 The highest risk elements are the moderately trafficked roads and the delivery yard. Surface water runoff from the Site will be treated by an Klargester Aquatreat full retention GRP surface water separator, (or similar approved product) to ensure efficient removal of pollutants. Mitigation indices for the proposed treatment components have been obtained from Kingspan and are shown in Table 3 below.

Table 3: SuDS Mitigation Indices

Type of SuDS	Mitigation Indices		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Pond	0.7	0.7	0.5
Klargester Aquatreat Full Retention GRP Separator SWT014	0.8	0.6	0.9

- 4.9.5 In order to satisfy the simple index approach, the proposed mitigation indices must be equal to or greater than the development's hazard indices. A comparison of the hazard indices in Table 2 and the mitigation indices in Table 3 shows that a pond alongside a retention separator would provide sufficient pollutant removal for the Site.
- 4.9.6 The manufacturers specification sheets for the proprietary treatment systems stated above are located within Appendix G.

4.10 Maintenance

- 4.10.1 All components shall be maintained in accordance with the relevant requirements shown in the SuDS Manual. These intervals should be deemed as a minimum frequency and reference should also be made to the manufacturers guidance to ensure all components are maintained correctly.
- 4.10.2 Maintenance of the separator will be as per the manufacturer's guidance.

Non-Return Valves

- 4.10.3 The non-return valve should be checked on a regular basis to ensure optimum performance. Key checks that should be performed during maintenance include checking that the valve flap opens freely and has not become caught or dislodged. The valve should also be cleaned of any debris that could be affecting the sealing or closing.

4.11 Foul Water Drainage Strategy

- 4.11.1 Foul flows from the Site will be discharged to the Welsh Water public sewer in the A485 marked SN58472203 on the Welsh Water sewer plan (included in Appendix H). In order to make the connection, a private package foul pump will be required.
- 4.11.2 A plan illustrating this is located within the drainage drawing, Appendix E.
- 4.11.3 Drainage Details are included in Appendix I.

4.12 Management

- 4.12.1 All separate surface and foul water drainage systems within the site are proposed to remain private and be maintained by the Site owner.

Appendix A – Limitations

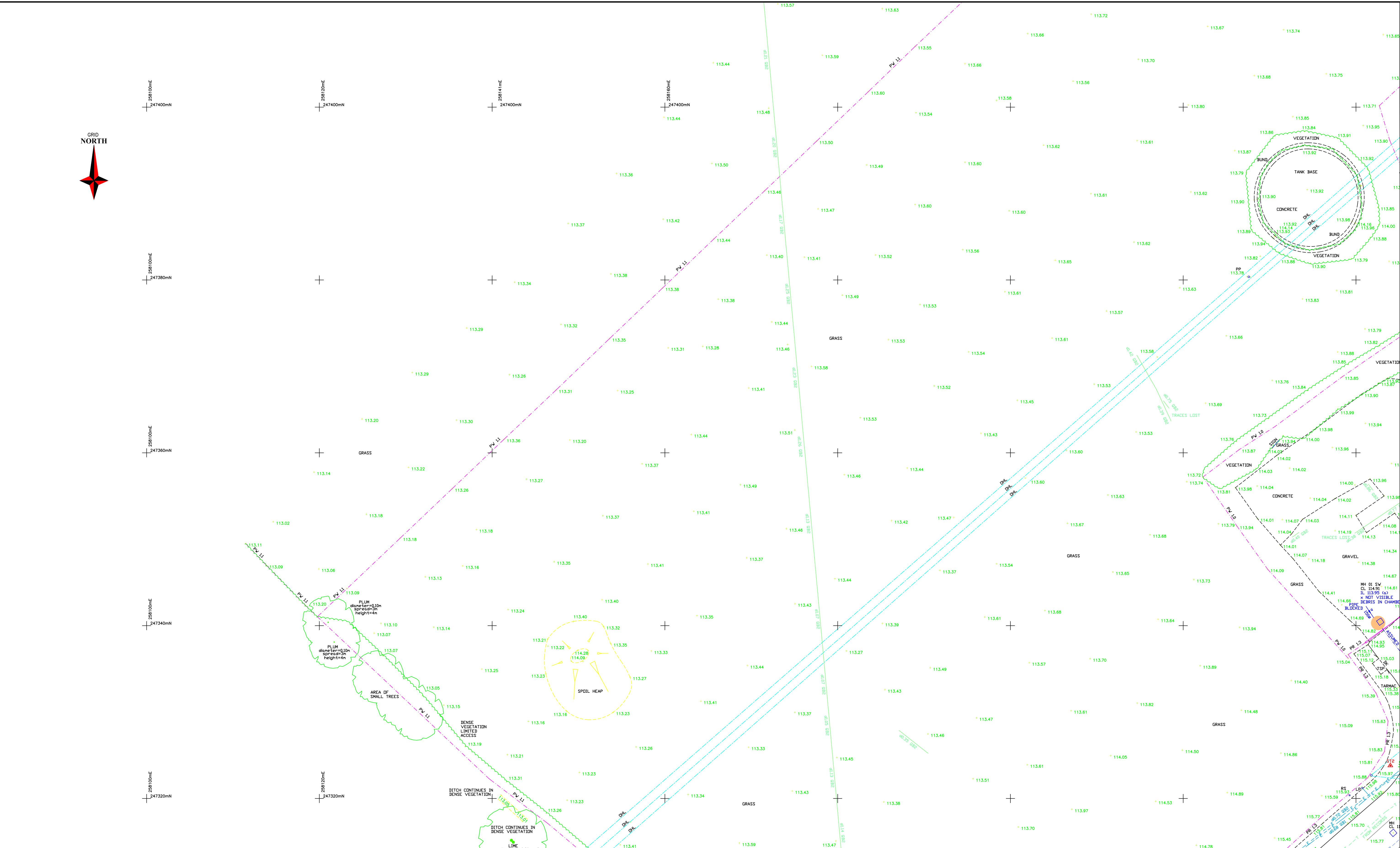
Limitations

The recommendations contained in this Report represent Lucion professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Lucion does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Lucion obtained, reviewed and evaluated information in preparing this Report from the Client and others. Lucion conclusions, opinions and recommendations has been determined using this information. Lucion does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Lucion has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Lucion for the sole and exclusive use of the Client and for the specific purpose for which Lucion was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Lucion, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Lucion does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Lucion from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Appendix B – Topographic Survey - EMP



Company details:
Address - Unit 4, Dales Court Business Center, 95 Dales Road, Ipswich IP1 4JR
Email- info@empdrainage.co.uk or gina@empdrainage.co.uk
Contact No - 01473 748 704 or 07595 314 790



NOTES:
The accuracy and content of this drawing are dependent on the original specification and EMP should be consulted before use at other scales.
Where underground services are shown, all reasonable care has been taken within the original specification and requirement. Before use of this information the user should satisfy themselves of the completeness and accuracy of such detail and consult EMP before undertaking any works. Due to the nature of this work and limitations imposed by ground conditions and the detection equipment, no guarantee can be given that all services have been recorded. PAS128 Type A Trial holes/excavations should be dug at critical locations.
Our aim is to produce the best possible results for our clients, within the agreed specification and cost constraints. All reasonable care has been taken in the survey detail represented on this drawing. Any discrepancies must be reported immediately to EMP and any other comments or feedback is most welcome.
Levels shown at kerbs are channel level unless stated.
Control: All levels and co-ordinates are related to the datums described.
The horizontal and vertical control of this survey is based on the Ordnance Survey National Grid and level datum via Network RTK GPS.
We have applied no reverse scale factor to this survey.

- Original Drawing Size: A1
- LEGEND
- Features:
- ACD Drainage Channel
 - AV Air Valve
 - AB Air Brick
 - BN Base Depth
 - BO Blocked
 - PP Power Pole
 - BS Bus Stop
 - BT British Telecom Cover
 - CD Cable Duct
 - CL Cover Level
 - CU Culvert
 - CTV Latrine TV Cover
 - DO Drop Kerb
 - DPC Drainage Pipe Course
 - EC End of Tranche
 - ER Earth Road
 - FI Fire Hydrant
 - GV Gas Valve
 - IC Inspection Cover
 - IL Invert Level
 - JB Junction Box
 - KO Kerb Outlet
- Surfaces & Finishes:
- LP Lamp Post
 - MB Breeze Block
 - PM Concrete
 - CL Casing Tiles
 - CP Concrete Paving Slabs
 - RT Road
 - LN Limestone
 - PAV Pavement
 - REN Render
 - SK Skewer
 - T Tarmac
 - TSP Textured Safety Paving
 - WMP Wire Mesh Fence
- Boundary Types:
- BW Barbed Wire
 - CB Close Boarded
 - CI Chainlink
 - CP Corrugated Iron
 - IR Iron Fencing
 - LL Larch Laid
 - PAL Post & Rail
 - PP Post & Wire
 - TR Timber Rail
 - WMP Wire Mesh Fence
- Services:
- CAV CATV cables
 - CS Combined Sewer
 - DA Data cables
 - EC Electric cables
 - FW Foul water
 - GA Gas pipes
 - LD Larch Laid
 - SW Storm water
 - TE Telecom cables
 - UN Unidentified
 - UT Unidentified
 - WV Water pipes
 - OD Overhead Lines
 - SD Service depth
- Building Level Details:
- D Door
 - EL Eave Level
 - FL Floor Level
 - FR Flat Roof Level
 - HL Head Level
 - PL Parapet Level
 - RL Ridge Level
 - SL Still Level
 - SP Spring Level
 - TA Top of Arch
 - W Window
 - CS Ceiling/Beam Soffit
- Survey Station
- Fence
 - Gate
 - Painted Road Markings
 - Edge of Vegetation
 - Kerb/Drop Kerb
 - Tree
 - Building
 - Overhead Building Detail
 - Wall

PAS 128:2014 Quality Level Guide

Quality Level	Description
QA	A utility is expected to exist but cannot be detected - (QA) Assumed route
QBS (Post Process)	Horizontal location only using one geophysical technique
QBS (Post Process)	Horizontal and vertical location only using one geophysical technique, eg GPR, or Radar
QA	Service verified in an open excavation, inside an inspection chamber / cover pit, or at the point the service enters / exits the ground. Visually confirmation

Station Schedule

Station	Start	End	Notes
1118	247320mN	247340mN	113.57
1119	247340mN	247360mN	113.63
1120	247360mN	247380mN	113.72
1121	247380mN	247400mN	113.80
1122	247400mN	247420mN	113.85

Sheet Layout

Sheet	Content
Sheet 1	1118
Sheet 2	1119
Sheet 3	1120
Sheet 4	1121

Job No. 1118

Surveyor M.Cable

Checked M.Wood

Date Aug 2024

Scale 1:200

Revision

Job No. 1118

Surveyor M.Cable

Checked M.Wood

Date Aug 2024

Scale 1:200

Revision

Client Details

Lidl Watlington Industrial Estate

Off Cowbridge Road

Bridgend

CF31 3PH

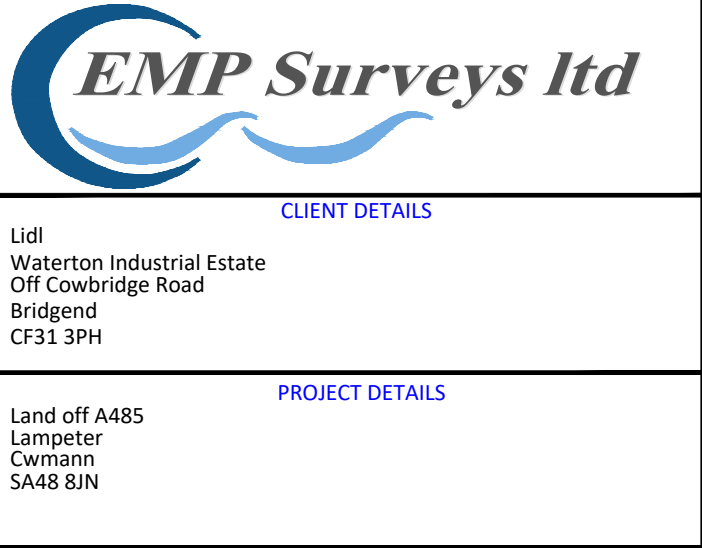
Project Details

Land off A485

Lampeter

Cwmbran

SA48 8JN



Appendix C – Proposed Development Plan

**SURPLUS LAND FOR FLOOD
MITIGATION MEASURES - AS PER
CONSULTANTS DESIGN**

SALES AREA
1334 m²

SLOW
ARAF



0 5 10 15 20 30 40 50
SCALE BAR 1:500

E: info@htcarchitects.co.uk

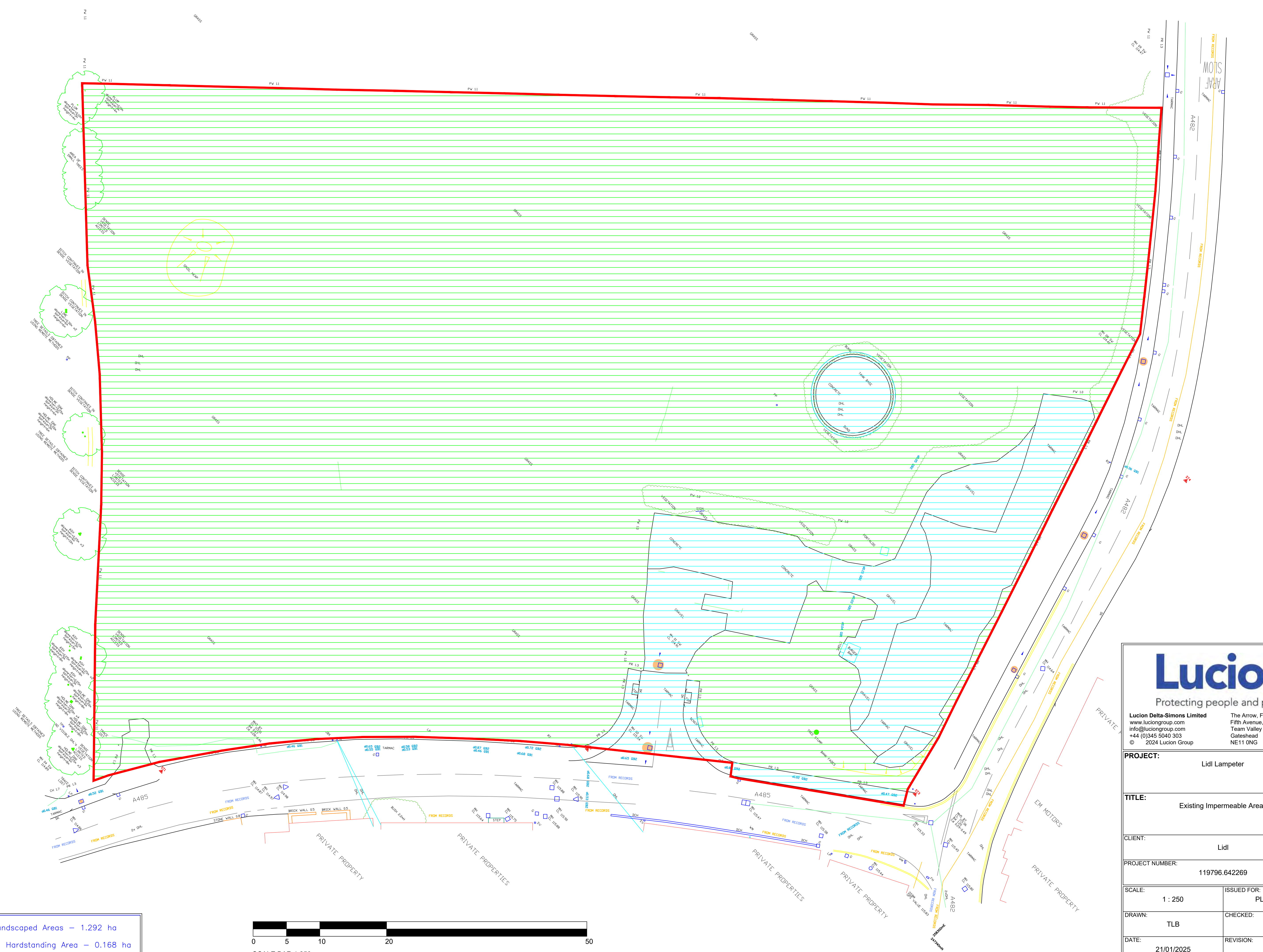
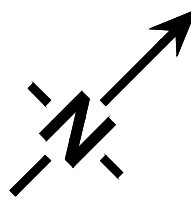
project
Cwmann, Lampeter

drawing title
Proposed GA Site Plan



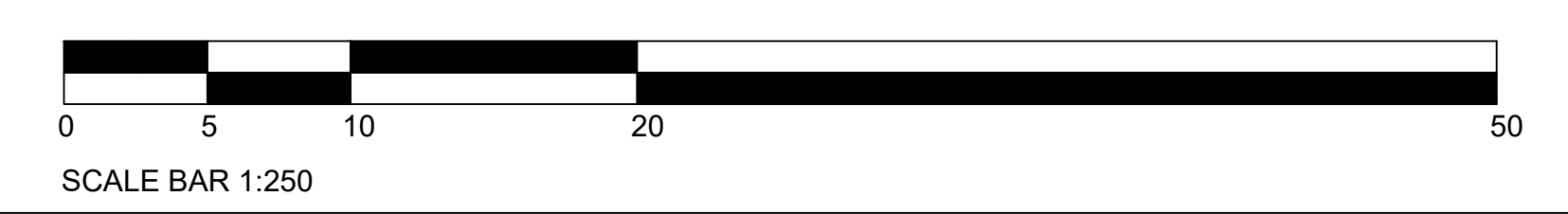
date **September 2024**
status **Planning**
scale **1:500 @ A3**
drawn **BM** checked -
job no. **3384** dwg no. **P411** rev. **F**

Appendix D – Existing and Proposed HS Area Drawing



Soft Landscaped Areas – 1.292 ha

Existing Hardstanding Area – 0.168 ha



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The Arrow, First Floor (South Wing)

Fifth Avenue,

Team Valley Trading Estate,

Gateshead

NE11 0NG

PROJECT:

Lidl Lampeter

TITLE:

Existing Impermeable Areas

CLIENT:

Lidl

PROJECT NUMBER:

119796.642269

SCALE:

1 : 250

ISSUED FOR:

PLANNING

DRAWN:

TLB

CHECKED:

PA

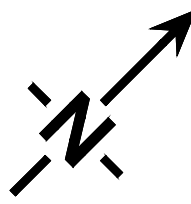
DATE:

21/01/2025

REVISION:

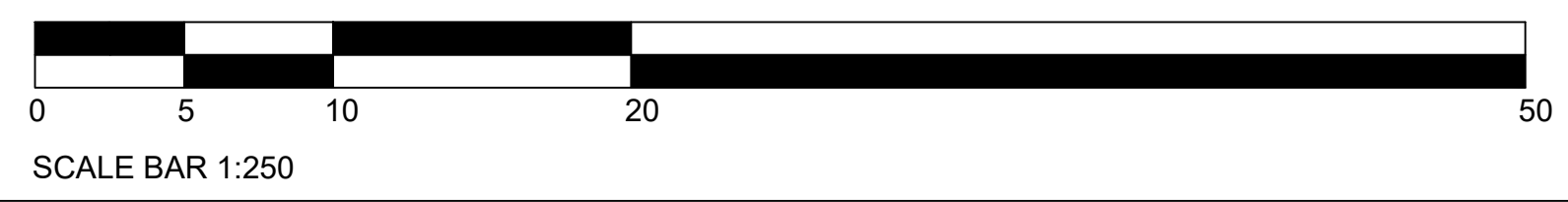
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PROJECT:	Lidl Lampeter
TITLE:	Existing Impermeable Areas
CLIENT:	Lidl
PROJECT NUMBER:	119796.642269
SCALE:	1 : 250
ISSUED FOR:	PLANNING
DRAWN:	TLB
CHECKED:	PA
DATE:	21/01/2025
REVISION:	2



Soft Landscaped Areas – 0.692 ha

Proposed Impermeable Area – 0.768 ha



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Fifth Avenue,

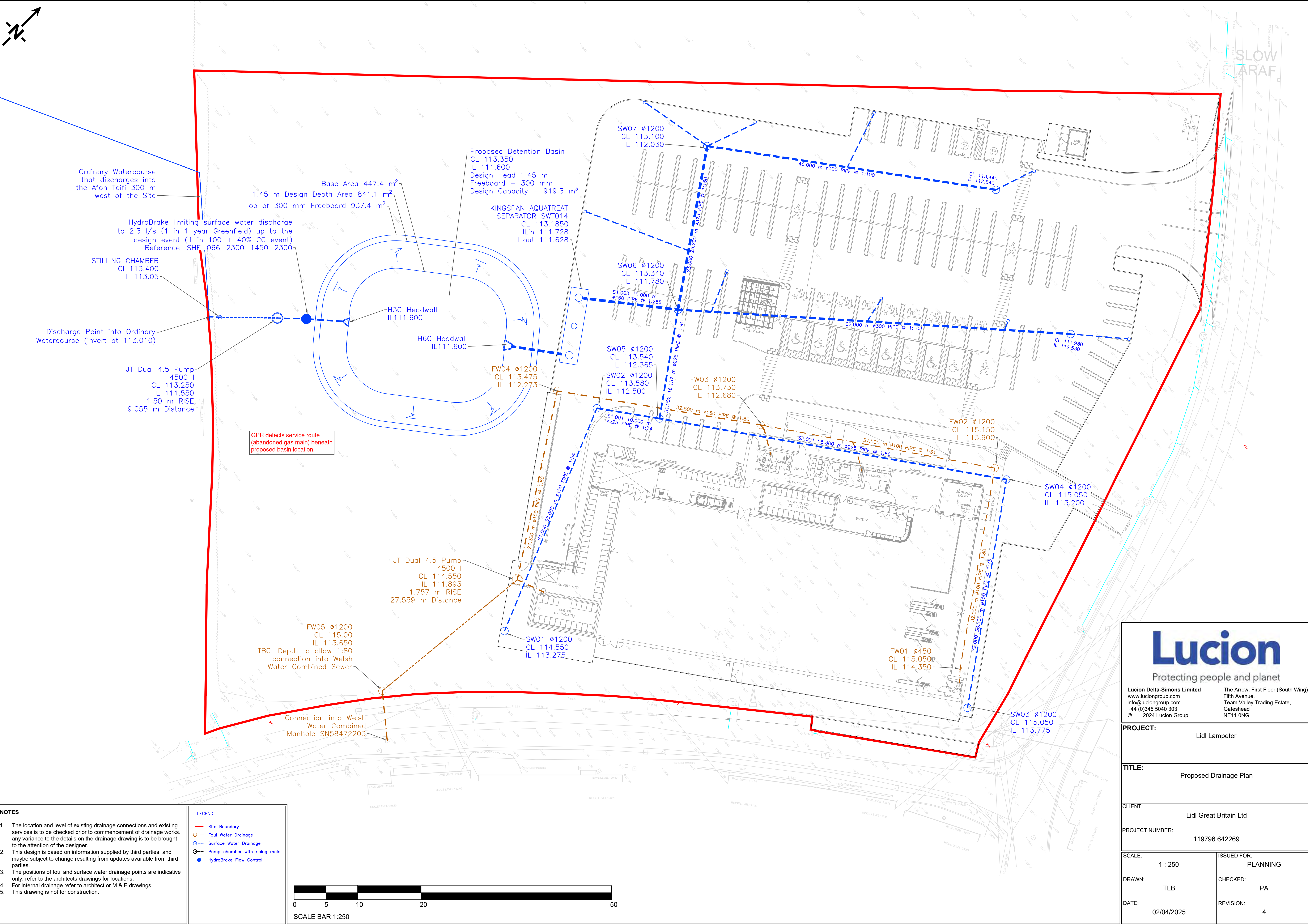
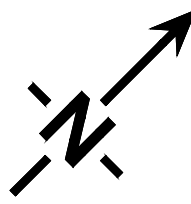
Team Valley Trading Estate,

Gateshead

NE11 0NG

PROJECT:		Lidl Lampeter	
TITLE:		Proposed Impermeable Areas	
CLIENT:		Lidl	
PROJECT NUMBER:		119796.642269	
SCALE:	1 : 250	ISSUED FOR:	PLANNING
DRAWN:	TLB	CHECKED:	PA
DATE:	21/01/2025	REVISION:	2

Appendix E – Drainage Drawing



NOTES

- The location and level of existing drainage connections and existing services is to be checked prior to commencement of drainage works, any variance to the details on the drainage drawing is to be brought to the attention of the designer.
- This design is based on information supplied by third parties, and maybe subject to change resulting from updates available from third parties.
- The positions of foul and surface water drainage points are indicative only, refer to the architects drawings for locations.
- For internal drainage refer to architect or M & E drawings.
- This drawing is not for construction.

LEGEND

- Site Boundary
- Foul Water Drainage
- Surface Water Drainage
- Pump chamber with rising main
- HydroBrake Flow Control

SCALE BAR 1:250

0 5 10 20 40 50

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Gateshead
NE11 0NG

PROJECT: Lidl Lampeter

TITLE: Proposed Drainage Plan

CLIENT: Lidl Great Britain Ltd

PROJECT NUMBER: 119796.642269

SCALE: 1 : 250	ISSUED FOR: PLANNING
DRAWN: TLB	CHECKED: PA
DATE: 02/04/2025	REVISION: 4

Appendix F – InfoDrainage Calculations

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Junctions Storm Phase: Phase	Lucion:		



Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
SW01	Manhole	208563.765	601474.581	114.550	1.275	113.275	Circular	1.200
SW02	Manhole	208563.765	601512.581	113.580	1.080	112.500	Circular	1.200
SW03	Manhole	208629.265	601476.147	115.050	1.275	113.775	Circular	1.200
SW04	Manhole	208629.265	601512.647	115.050	1.850	113.200	Circular	1.200
SW06	Manhole	208574.104	601528.800	113.340	1.560	111.780	Circular	1.200
SW05	Manhole	208573.765	601512.647	113.540	1.175	112.365	Circular	1.200
SW07	Manhole	208574.104	601555.000	113.100	1.070	112.030	Circular	1.200

Name	Lock
SW01	None
SW02	None
SW03	None
SW04	None
SW06	None
SW05	None
SW07	None

Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
SW01	Inlet	Roof Area 1	(None)	No Restriction
SW02	Inlet	Roof Area 2 S1.000	(None)	No Restriction
SW03	Inlet	Roof Area 4	(None)	No Restriction
SW04	Inlet	Roof Area 3 S2.000	(None)	No Restriction
SW06	Inlet	Parking Area S1.002	(None)	No Restriction
	Inlet (1)	S3.000	(None)	No Restriction
SW05	Inlet	S1.001 S2.001	(None)	No Restriction
SW07	Inlet	Parking Area (1)	(None)	No Restriction

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
SW01	Outlet	S1.000	Free Discharge
SW02	Outlet	S1.001	Free Discharge
SW03	Outlet	S2.000	Free Discharge
SW04	Outlet	S2.001	Free Discharge
SW06	Outlet	S1.003	Free Discharge
SW05	Outlet	S1.002	Free Discharge
SW07	Outlet	S3.000	Free Discharge

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Lucion:		



Pond

Type : Pond

Dimensions

Exceedance Level (m)	113.350
Depth (m)	1.750
Base Level (m)	111.600
Freeboard (mm)	300
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	3.052
Total Volume (m³)	919.271

Depth (m)	Area (m²)	Volume (m³)
0.000	447.40	0.000
1.450	841.10	919.271
1.750	937.40	1185.915

Inlets

Inlet

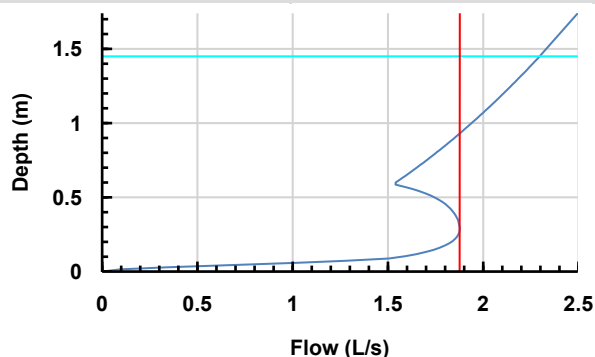
Inlet Type	Point Inflow
Incoming Item(s)	S1.003
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Hydro-Brake®
Invert Level (m)	111.600
Design Depth (m)	1.450
Design Flow (L/s)	2.3
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☒

Unit Reference	SHE-0066-2300-1450-2300
----------------	-------------------------



Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024			
	Designed by: TLB	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Storm Phase: Phase	Lucion:			

Advanced

Perimeter	Circular
Length (m)	14.319
Friction Scheme	Manning's n
n	0.03

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Phase	Lucion:		



Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
S1.000	38.000	Pipe	54.286		0.6	150	114.550	113.275
S1.001	10.000	Pipe	74.073		0.6	225	113.580	112.500
S2.000	36.500	Pipe	73.000		0.6	150	115.050	113.775
S2.001	55.500	Pipe	66.467		0.6	225	115.050	113.200
S1.002	16.157	Pipe	44.879		0.6	225	113.540	112.365
S1.003	23.008	Pipe	287.596		0.6	450	113.340	111.780
S3.000	26.200	Pipe	149.716		0.6	375	113.100	112.030

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Culvert Type	Culvert Entrance
S1.000	113.580	112.575		None	(None)	(None)
S1.001	113.540	112.365		None	(None)	(None)
S2.000	115.050	113.275		None	(None)	(None)
S2.001	113.540	112.365		None	(None)	(None)
S1.002	113.340	112.005		None	(None)	(None)
S1.003	113.350	111.700		Levels	(None)	(None)
S3.000	113.340	111.855		None	(None)	(None)

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase	Lucion:		



Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Parking Area	SW06		Time of Concentration	0.282	100	0	100	0.282
Parking Area (1)	SW07		Time of Concentration	0.282	100	0	100	0.282
Roof Area 1	SW01		Time of Concentration	0.051	100	0	100	0.051
Roof Area 2	SW02		Time of Concentration	0.051	100	0	100	0.051
Roof Area 3	SW04		Time of Concentration	0.051	100	0	100	0.051
Roof Area 4	SW03		Time of Concentration	0.051	100	0	100	0.051
TOTAL		0.0		0.768				0.768

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Lucion:		



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Roof Area 1	FEH: 100 years: +40 %: 15 mins: Summer	0.05	29.5	12.910
Roof Area 2	FEH: 100 years: +40 %: 15 mins: Summer	0.05	29.5	12.910
Roof Area 3	FEH: 100 years: +40 %: 15 mins: Summer	0.05	29.5	12.910
Roof Area 4	FEH: 100 years: +40 %: 15 mins: Summer	0.05	29.5	12.910
Parking Area	FEH: 100 years: +40 %: 15 mins: Summer	0.28	163.1	71.379
Parking Area (1)	FEH: 100 years: +40 %: 15 mins: Summer	0.28	163.1	71.379

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Lucion:		



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Roof Area 1	FEH: 30 years: +0 %: 15 mins: Summer	0.05	17.1	7.455
Roof Area 2	FEH: 30 years: +0 %: 15 mins: Summer	0.05	17.1	7.455
Roof Area 3	FEH: 30 years: +0 %: 15 mins: Summer	0.05	17.1	7.455
Roof Area 4	FEH: 30 years: +0 %: 15 mins: Summer	0.05	17.1	7.455
Parking Area	FEH: 30 years: +0 %: 15 mins: Summer	0.28	94.5	41.237
Parking Area (1)	FEH: 30 years: +0 %: 15 mins: Summer	0.28	94.5	41.237

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Lucion:		



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Roof Area 1	FEH: 2 years: +0 %: 15 mins: Summer	0.05	8.4	3.700
Roof Area 2	FEH: 2 years: +0 %: 15 mins: Summer	0.05	8.4	3.700
Roof Area 3	FEH: 2 years: +0 %: 15 mins: Summer	0.05	8.4	3.700
Roof Area 4	FEH: 2 years: +0 %: 15 mins: Summer	0.05	8.4	3.700
Parking Area	FEH: 2 years: +0 %: 15 mins: Summer	0.28	46.7	20.448
Parking Area (1)	FEH: 2 years: +0 %: 15 mins: Summer	0.28	46.7	20.448

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Lucion:		



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FEH: 100 years: +40 %: 15 mins: Summer	114.550	113.275	113.801	0.526	29.5	0.594	0.000	21.3	12.745	Surcharged
SW02	FEH: 100 years: +40 %: 15 mins: Summer	113.580	112.500	113.240	0.740	50.8	0.837	0.000	45.9	25.861	Surcharged
SW03	FEH: 100 years: +40 %: 15 mins: Summer	115.050	113.775	114.127	0.352	29.5	0.398	0.000	22.6	12.910	Surcharged
SW04	FEH: 100 years: +40 %: 15 mins: Summer	115.050	113.200	113.519	0.319	52.1	0.361	0.000	41.0	25.774	Surcharged
SW06	FEH: 100 years: +40 %: 1440 mins: Winter	113.340	111.780	113.047	1.267	31.4	1.434	0.000	31.2	1073.639	Flood Risk
SW05	FEH: 100 years: +40 %: 15 mins: Summer	113.540	112.365	113.132	0.767	86.9	0.868	0.000	81.8	51.959	Surcharged
SW07	FEH: 100 years: +40 %: 1440 mins: Winter	113.100	112.030	113.047	1.017	11.6	1.151	0.000	11.6	395.874	Flood Risk

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Lucion:		



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FEH: 30 years: +0 %: 15 mins: Summer	114.5 50	113.2 75	113.36 8	0.093	17.1	0.105	0.000	15.9	7.446	OK
SW02	FEH: 30 years: +0 %: 15 mins: Summer	113.5 80	112.5 00	112.64 1	0.141	33.0	0.159	0.000	32.4	14.898	OK
SW03	FEH: 30 years: +0 %: 15 mins: Summer	115.0 50	113.7 75	113.87 8	0.103	17.1	0.116	0.000	15.8	7.445	OK
SW04	FEH: 30 years: +0 %: 15 mins: Summer	115.0 50	113.2 00	113.31 2	0.112	32.8	0.127	0.000	31.5	14.899	OK
SW06	FEH: 30 years: +0 %: 1440 mins: Winter	113.3 40	111.78 0	112.48 9	0.709	18.4	0.801	0.000	18.0	626.377	Surcharged
SW05	FEH: 30 years: +0 %: 15 mins: Summer	113.5 40	112.3 65	112.53 7	0.172	63.9	0.194	0.000	59.3	29.769	OK
SW07	FEH: 30 years: +0 %: 1440 mins: Winter	113.1 00	112.0 30	112.48 9	0.459	6.8	0.519	0.000	6.7	230.671	Surcharged

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Lucion:		



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW01	FEH: 2 years: +0 %: 15 mins: Summer	114.5 50	113.2 75	113.33 5	0.060	8.4	0.068	0.000	7.8	3.693	OK
SW02	FEH: 2 years: +0 %: 15 mins: Summer	113.5 80	112.5 00	112.58 7	0.087	16.3	0.098	0.000	15.9	7.391	OK
SW03	FEH: 2 years: +0 %: 15 mins: Summer	115.0 50	113.7 75	113.84 0	0.065	8.4	0.074	0.000	7.7	3.692	OK
SW04	FEH: 2 years: +0 %: 15 mins: Summer	115.0 50	113.2 00	113.27 5	0.075	16.2	0.085	0.000	15.4	7.391	OK
SW06	FEH: 2 years: +0 %: 1440 mins: Winter	113.3 40	111.78 0	112.12 7	0.347	11.4	0.392	0.000	11.3	389.824	OK
SW05	FEH: 2 years: +0 %: 15 mins: Summer	113.5 40	112.3 65	112.46 8	0.103	31.3	0.116	0.000	28.9	14.740	OK
SW07	FEH: 2 years: +0 %: 15 mins: Summer	113.1 00	112.0 30	112.17 3	0.143	46.7	0.162	0.000	45.6	20.333	OK

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Lucion:		





FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Residant Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FEH: 100 years: +40 %: 1440 mins: Winter	113.047	113.047	1.447	1.447	31.2	917.122	0.000	0.000	2.3	346.843	0.234	OK

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Lucion:		





FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FEH: 30 years: +0 %: 1440 mins: Winter	112.489	112.489	0.889	0.889	18.0	494.808	0.000	0.000	1.9	279.834	46.174	OK

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Lucion:		





FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Residant Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FEH: 2 years: +0 %: 1440 mins: Winter	112.127	112.127	0.527	0.527	11.3	268.766	0.000	0.000	1.9	279.102	70.763	OK

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Lucion:		



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S1.000	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	SW01	SW02	114.550	113.801	0.150	12.745	1.3	0.88	21.3	Surcharged
S1.001	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	SW02	SW05	113.580	113.240	0.225	25.861	1.2	0.76	45.9	Surcharged
S2.000	FEH: 100 years: +40 %: 15 mins: Winter	Pipe	SW03	SW04	115.050	114.041	0.150	12.906	1.3	1.09	22.8	Surcharged
S2.001	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	SW04	SW05	115.050	113.336	0.225	36.501	1.1	0.66	42.2	OK
S1.002	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	SW05	SW06	113.540	112.955	0.225	73.005	2.1	1.08	84.1	Surcharged
S1.003	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	SW06	Pond	113.340	112.647	0.450	191.980	2.5	2.11	399.8	Surcharged
S3.000	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	SW07	SW06	113.100	112.869	0.375	71.129	1.4	0.97	158.9	Flood Risk

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Lucion:		



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S1.000	FEH: 30 years: +0 %: 15 mins: Summer	Pipe	SW01	SW02	114.550	113.368	0.090	7.446	1.4	0.66	15.9	OK
S1.001	FEH: 30 years: +0 %: 15 mins: Summer	Pipe	SW02	SW05	113.580	112.641	0.156	14.898	1.1	0.54	32.4	OK
S2.000	FEH: 30 years: +0 %: 15 mins: Summer	Pipe	SW03	SW04	115.050	113.878	0.100	7.445	1.3	0.76	15.8	OK
S2.001	FEH: 30 years: +0 %: 15 mins: Summer	Pipe	SW04	SW05	115.050	113.312	0.142	14.899	1.2	0.49	31.5	OK
S1.002	FEH: 30 years: +0 %: 15 mins: Summer	Pipe	SW05	SW06	113.540	112.537	0.203	29.769	1.7	0.76	59.3	OK
S1.003	FEH: 30 years: +0 %: 15 mins: Summer	Pipe	SW06	Pond	113.340	112.240	0.398	111.610	1.5	1.21	229.2	Surcharged
S3.000	FEH: 30 years: +0 %: 15 mins: Summer	Pipe	SW07	SW06	113.100	112.276	0.315	41.136	1.0	0.54	88.2	OK

Lidl Lampeter: Detailed Drainage Calculations 1 in 100 year + 40% CC	Date: 25/09/2024		
	Designed by: TLB	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Lucion:		



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S1.000	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SW01	SW02	114.550	113.335	0.059	3.693	1.2	0.32	7.8	OK
S1.001	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SW02	SW05	113.580	112.587	0.095	7.391	1.0	0.26	15.9	OK
S2.000	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SW03	SW04	115.050	113.840	0.064	3.692	1.1	0.37	7.7	OK
S2.001	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SW04	SW05	115.050	113.275	0.089	7.391	1.1	0.24	15.4	OK
S1.002	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SW05	SW06	113.540	112.468	0.099	14.740	1.7	0.37	28.9	OK
S1.003	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SW06	Pond	113.340	112.052	0.253	55.560	1.2	0.6	113.3	OK
S3.000	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SW07	SW06	113.100	112.173	0.170	20.333	0.9	0.28	45.6	OK

Appendix G – Maintenance Schedules

Water Management Solutions

Klargester

AquaTreat Full Retention GRP Surface Water Treatment Separators

Mitigation Indices

TSS	Metals	Hydrocarbons
0.8%	0.6%	0.9%



Why choose an AquaTreat separator?

- Larger silt storage capacities (compared to vortex separators)
- Our indices cater for high polluted lands (single piece solution)
- Reduced risk of silt build up
- Lesser risk of downstream pollution in SuDS solution due to high capacity silt storage
- Easier servicing, with maintenance from ground level
- SmartServ Pro remote monitoring solution (available as optional extra)



Our range has been tested against full flow

Our units have been tested at their maximum flow rate (10l/s), unlike some products which have been tested based on bypass and therefore only 10% of the flow. This ensures total accuracy of our silt retention results, by replicating the full effect of the silt wash through.

As part of our Planet Passionate programme, Kingspan are dedicated to delivering innovative surface water management technologies, developed on the back of 65 years' experience.

*Terms and conditions apply. View online at <https://www.kingspan.com/gb/en-gb/products/wastewater-management/warranty-terms>



Klargester AquaTreat

Full Retention GRP Surface Water Treatment Separators

Technical Specifications

Model	10 l/s Low Risk		6 l/s Medium Risk			
	Treated Flowrate [l/s]	Connectable Surface Area [m²]	Treated Flowrate [l/s]	Connectable Surface Area [m²]	Length (mm)	Diameter (mm)
SWT001	10	1333	6	800	2610	1225
SWT002	15	2004	9	1202	3910	1225
SWT003	19	2535	11	1524	3230	2010
SWT004	23	3105	14	1863	3960	2010
SWT005	28	3747	17	2248	4750	2010
SWT006	34	4563	21	2738	5970	2010
SWT007	44	5814	26	3489	7365	2010
SWT008	48	6368	29	3821	5744	2820
SWT009	52	6880	31	4128	6200	2820
SWT010	61	8177	37	4906	7365	2820
SWT011	72	9635	43	5781	8675	2820
SWT012	83	11082	50	6649	9975	2820
SWT013	94	12535	56	7521	11280	2820
SWT014	100	13362	60	8017	11994	2820
SWT015	106	14183	64	8510	12766	2820
SWT016	113	15029	68	9017	13528	2820
SWT017	119	15897	72	9538	14300	2820
SWT018	126	16754	75	10053	15071	2820
SWT019	132	17601	79	10560	15833	2820

Low		
CoP at 10 l/s	% Removal	Mitigation Index
Total Suspended Solids (TSS)	75.6%	0.7
Metals*	57%	0.5
Hydrocarbons	99.6%	0.9
* Reduction of heavy metals by collecting and retaining suspended solids is assumed as 7.5%		

Medium		
CoP at 6 l/s	% Removal	Mitigation Index
Total Suspended Solids (TSS)	81.8%	0.8
Metals*	61.4%	0.6
Hydrocarbons	99.6%	0.9
* Reduction of heavy metals by collecting and retaining suspended solids is assumed as 7.5%		

For more information on any of our products: T: +44 (0)1296 633 033
E: accivilsales@kingspan.com or visit kingspan.co.uk/klargester

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Wetland and Pond Maintenance Schedule

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass - public areas	Monthly (during growing season), or as required
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage, and / or physical damage.	Monthly
	Inspect water body for signs of poor water quality	Monthly (May - October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options.	Half yearly
	Check any mechanical devices e.g. penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Remove sediment from any forebay	Every 1 - 5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays	Every 5 years, or as required
Occasional maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, e.g. 25-50 years
Remedial actions	Repair erosion or other damage	As required
	Replant where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair/rehabilitate of Inlets, outlets and overflows	As required

Ref. Table 23.1 CIRIA C753 'The SuDS Manual'

Appendix H – Welsh Water Sewer Plans

Lucion Delta Simons, Cwmann, Ceredigion
SA48 8DR



LEGEND(Representative of most common features)

Waste network:			
Foul chamber	Surface water chamber	Combined chamber	Combined sewer overflow
Special purpose chamber	Treatment works	Pumping station	Sewer symbol colour indicator type
Outfall	Lamphead	Storm overflow	Rising main
Gravity sewer	Private sewer	Private sewer subject to Sect. 104 adoption agreement	Private Sewer Transfer
Lateral Drain	Inspection Chamber		

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

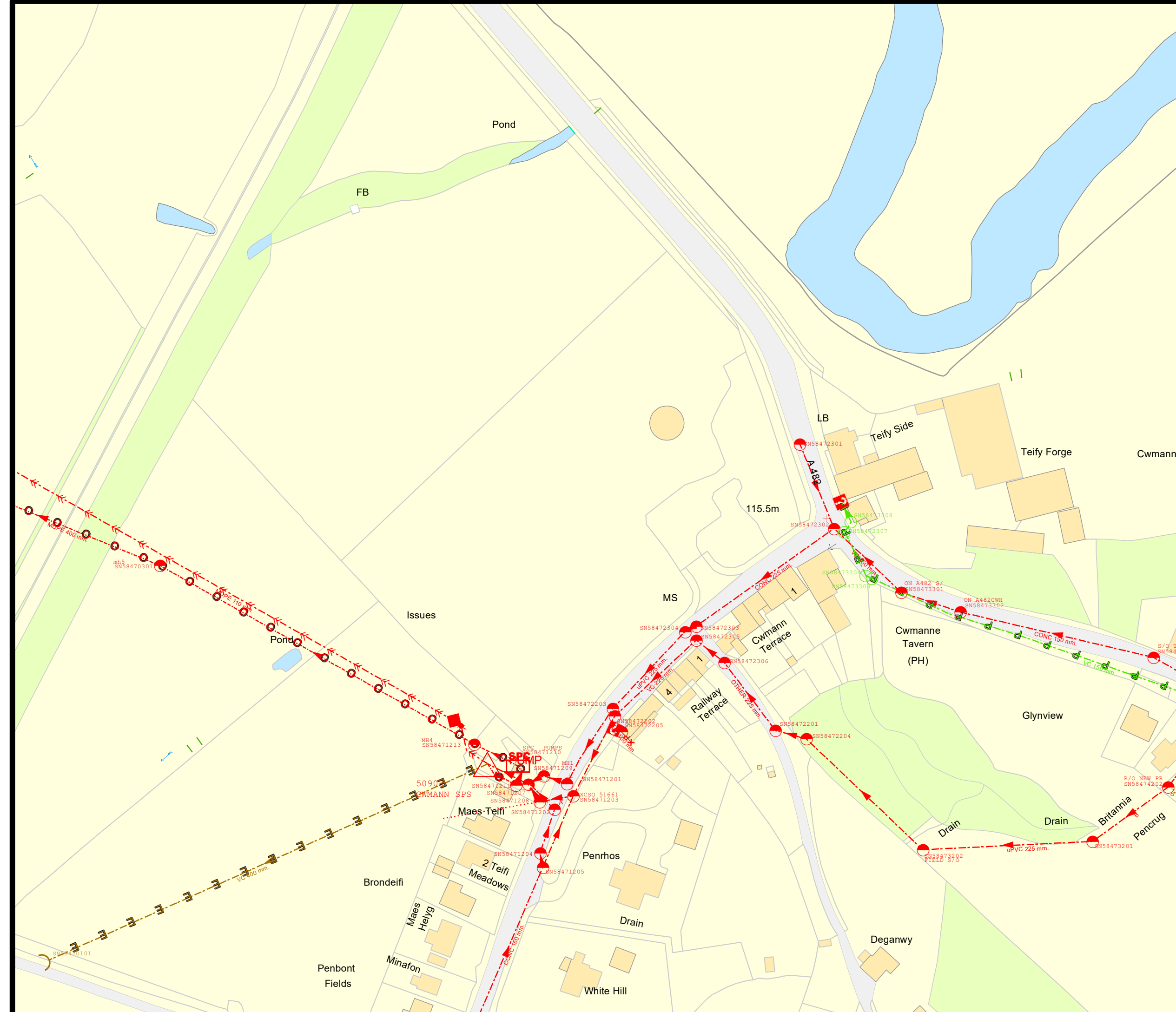
Dŵr Cymru Cyfyngedig (the Company) gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

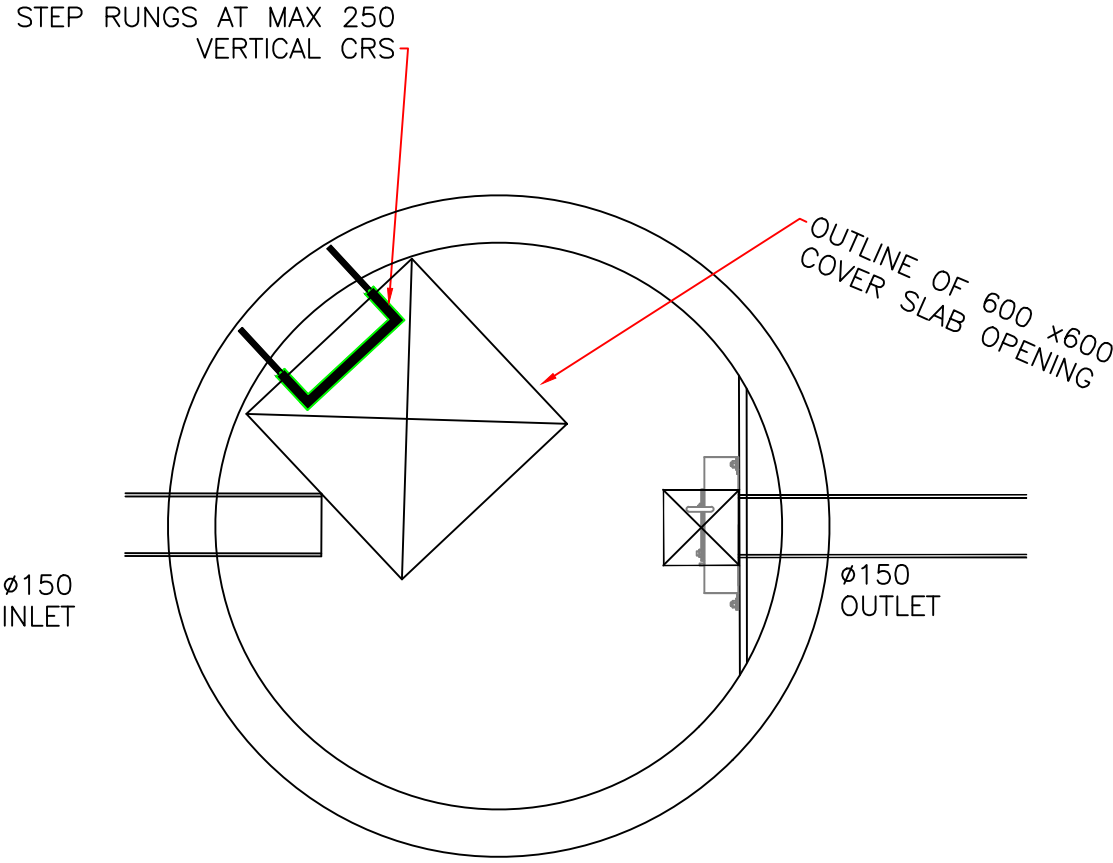
**EXACT LOCATIONS OF ALL APPARATUS
TO BE DETERMINED ON SITE.**

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HMSO. © Crown copyright and database right 2017.
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Ordnance Survey Licence number 100019534

Map Ref: 258210,247359
Map scale: 1:1250
Printed by: Emily Marsden
Printed on: 23 Jan 2025

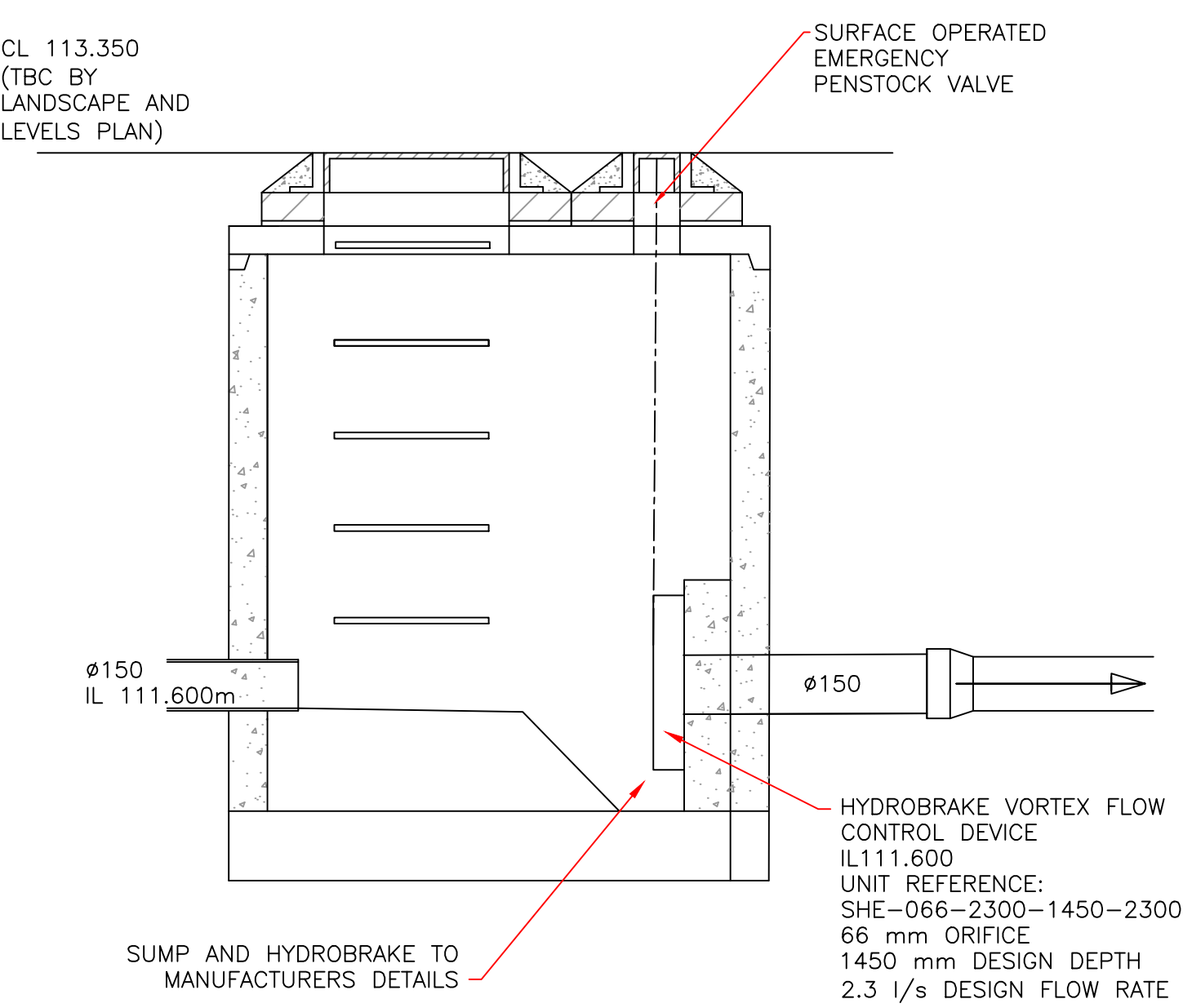


Appendix I – Drainage Details



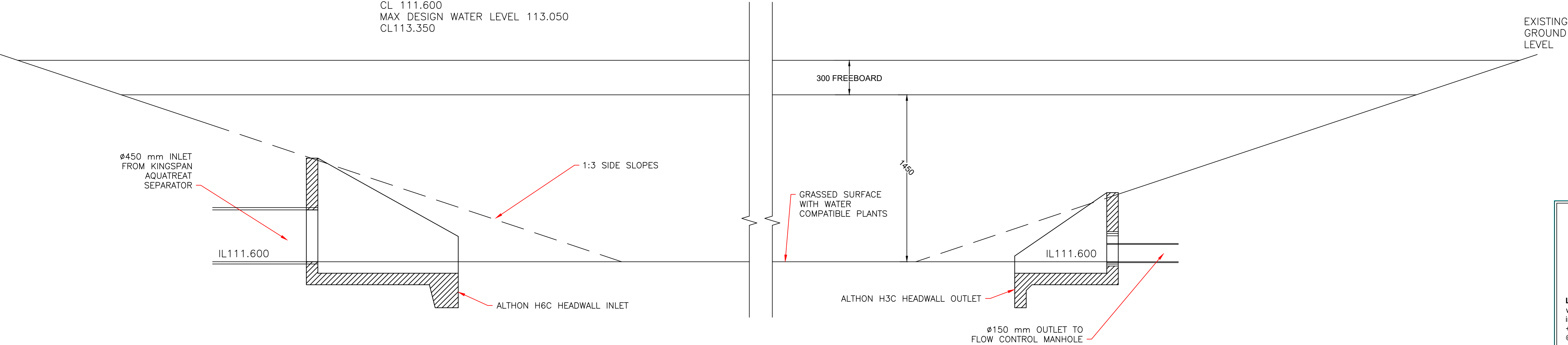
HYDRO-BRAKE OPTIMUM:
SHE-066-2300-1450-2300
HEAD - 1450 mm
FLOW - 2.3 l/s
150mm OUTLET

FLOW CONTROL MANHOLE PLAN VIEW 1:20



FLOW CONTROL MANHOLE SECTION 1:20
CL 113.350 m
IL 111.600 m

SURFACE WATER DETENTION BASIN SECTION
1.750 m DEEP, 1 IN 3 SIDE SLOPES
300 mm FREEBOARD
VOLUME AVAILABLE AT 1.450 M DESIGN DEPTH = 919.3 m³
CL 111.600
MAX DESIGN WATER LEVEL 113.050
CL113.350



Lucion

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Lucion Delta-Simons Limited

www.luciongroup.com

info@luciongroup.com

+44 (0)345 5040 303

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The Arrow, First Floor (South Wing)

Fifth Avenue,

Team Valley Trading Estate,

Gateshead

NE11 0NG

PROJECT:

Lidl Lampeter

TITLE:

Typical SuDS Details

CLIENT:

Lidl Great Britain Ltd

PROJECT NUMBER:

119796.642269

SCALE:

1 : 20

ISSUED FOR:

PLANNING

DRAWN:

TLB

CHECKED:

LB

DATE:

02/04/2025

REVISION:

2



TYPICAL MANHOLE DETAIL - TYPE C1

TYPICAL MANHOLE DETAIL - TYPE C1&C2



TYPICAL MANHOLE DETAIL - TYPE B

TYPE D PPIC MANHOLE WITH STANDARD ROUND COVER (NTS)

 Protecting people and planet	
Lucion Delta-Simons Limited www.luciongroup.com info@luciongroup.com +44 (0)345 5040 303 © 2024 Lucion Group	The Arrow, First Floor (South Wing) Fifth Avenue, Team Valley Trading Estate, Gateshead NE11 0NG
PROJECT: Lidl Lampeter	
TITLE: Typical Drainage Details	
CLIENT: Lidl Great Britain Ltd	
PROJECT NUMBER: 119796.642269	
SCALE: 1 : 20	ISSUED FOR: PLANNING
DRAWN: TLB	CHECKED: LB
DATE: 19/03/2025	REVISION: A

Appendix K – NRW Responses

Luke Bland

From: Flood Risk Analysis South <FRASouth@cyfoethnaturiolcymru.gov.uk>
Sent: 25 September 2024 13:10
To: Nigel West
Subject: RE: Flood modelling at Lampeter using NRW model

Dear Nigel,

Thank you for your question regarding the frequency of flooding on the Teifi floodplain within the Lampeter area. We refer you the following reports which discuss the frequency of flooding. Note that the Co-op Store car park expected flood every 2 to 5 years:

- 2016s4541 Lampeter - FINAL Model User Report v3.0
- 2016s4541 Lampeter Phase 2 - Final Project Report v2.0

If you have any further questions on this please don't hesitate to contact us,

Thanks,

Alastair Papworth

Cynghorydd Dadansoddi Risg Llifogydd / Flood Risk Analysis Advisor

Dadansoddi Risg Llifogydd / Flood Risk Analysis

Yn Ardystiedig o ran Llythrennedd Carbon / Certified Carbon Literate

Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.



From: Nigel West <nigel@herringtonconsulting.co.uk>
Sent: Wednesday, September 25, 2024 8:55 AM
To: Flood Risk Analysis South <FRASouth@cyfoethnaturiolcymru.gov.uk>
Subject: RE: Flood modelling at Lampeter using NRW model

You don't often get email from nigel@herringtonconsulting.co.uk. [Learn why this is important](#)

Rhybudd: Deilliodd yr e-bost hwn o'r tu allan i'r sefydliad. Peidiwch â chlicio dolenni, atodiadau agored nac sganio codau QR oni bai eich bod yn cydnabod yr anfonwr ac yn gwybod bod y cynnwys yn ddiogel.

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Morning Alastair,

Over the last couple of weeks we have been working on the model. With the re-runs using the old hydrology (and checking against the original product 6 outputs) the 50%AEP event is very much out of bank and the flood plains are very wet. These also necessitate that the initial conditions are already wetting a significant proportion of the flood plain.

Typically, we wouldn't expect this to be the case and, in the absence of any calibration data, would use this to adjust the model/hydrology anecdotally so that the 50%AEP is either in-channel or only just beginning to exceed the banks.

Can you advise whether such extensive flooding during the 50%AEP is expected for the Afon Teifi at Lampeter please?

Kind regards,

Nigel West BSc MCIWEM

Principal Numerical Modeller

01227 833 855 | nigel@herringtonconsulting.co.uk



From: Flood Risk Analysis South <FRASouth@cyfoethnaturiolcymru.gov.uk>

Sent: 13 September 2024 07:32

To: Nigel West <nigel@herringtonconsulting.co.uk>

Subject: RE: Flood modelling at Lampeter using NRW model

Good Morning Nigel,

[We have added comments in blue below.](#)

On the point about bridges, the model has several BB and BBW units for which the form loss is already set to 0.005. Hopefully this is documented in the P5 already; although I have no justification to alter any of these going forwards. – [NRW recommend the default value, unless justification is provided, we believe value 0.005 was used prior to TUFLOW advising on default value of 0.001 to be used.](#)

We will review the hydrology as one of the first things to do. – [you may wish to ask NRW Hydrology team to review the initial flow estimation/hydrographs, this will incur a fee.](#)

In addition to the below, I intend to do the following also:

- Convert the MIF (MapInfo) type environment to SHP (GIS) in line with TUFLOW latest recommendations and to be able to leverage the modern results grid files compression and projection accuracy. – [Note both MIF and Shp files are considered suitable for model build/update. We note TUFLOW tools has an option to convert MIF to shp format. Note that auto conversion tools may introduce errors and it is for the modeller to ensure these have worked correctly.](#)

- Convert the model from 'classic' to HPC/GPU; noting that the original model required 30 hours to run only the initial conditions I suspect that this will be essential to make the runtimes manageable as this will otherwise severely slow the project programme. As part of this I will verify the HPC model results against the already provided P6 extents etc. Switching to HPC will also ensure that we are using TUFLOWs latest/recommended/preferred viscosity implementation. – Noted, the modeller may wish to consider if the whole model is required for your project.
- The model will be refined in detail at the site of interest, which will include the incorporation of the site topographic survey data into the model grid. For this, we take an approach whereby we apply the difference between the topo survey data and the LiDAR to the grid so that we retain the detail of the LiDAR but correct the absolute elevation of the grid to match that of the topo. We find that this works exceptionally well for most situations and will of course review whether its appropriate here. – Noted, it is for the modeller to ensure this works as intended.

Do you have any issues with any of the three points above?

NRW understands that during model update there may be discovered other changes that are required, this is for the modeller to consider whether these are completed and to document any reason for amending or not amending the information.

NRW expect a modelling technical note or report, QA documentation and model log to be provided if the model is to be reviewed by NRW.

We hope that helps in your programming your work.

Kind Regards,

Alastair Papworth

Cynghorydd Dadansoddi Risg Llifogydd / Flood Risk Analysis Advisor

Dadansoddi Risg Llifogydd / Flood Risk Analysis

Yn Ardystiedig o ran Llythrennedd Carbon / Certified Carbon Literate

Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.



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thriving together**



cyfoethnaturiol.cymru
naturalresources.wales

From: Nigel West <nigel@herringtonconsulting.co.uk>

Sent: Thursday, September 12, 2024 1:20 PM

To: Flood Risk Analysis South <FRASouth@cyfoethnaturiolcymru.gov.uk>

Subject: RE: Flood modelling at Lampeter using NRW model

Rhybudd: Deilliodd yr e-bost hwn o'r tu allan i'r sefydliad. Peidiwch â chlicio dolenni, atodiadau agored nac sganio codau QR oni bai eich bod yn cydnabod yr anfonwr ac yn gwybod bod y cynnwys yn ddiogel.

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Hi Alastair,

Thank you very much for your swift reply!

Our client has since received the model from your colleague, Michelle Lewis.

I've downloaded and now had a brief chance to review.

I note all your points below, they all sound very sensible.

On the point about bridges, the model has several BB and BBW units for which the form loss is already set to 0.005. Hopefully this is documented in the P5 already; although I have no justification to alter any of these going forwards.

We will review the hydrology as one of the first things to do.

In addition to the below, I intend to do the following also:

- Convert the MIF (MapInfo) type environment to SHP (GIS) in line with TUFLOW latest recommendations and to be able to leverage the modern results grid files compression and projection accuracy.
- Convert the model from 'classic' to HPC/GPU; noting that the original model required 30 hours to run only the initial conditions I suspect that this will be essential to make the runtimes manageable as this will otherwise severely slow the project programme. As part of this I will verify the HPC model results against the already provided P6 extents etc. Switching to HPC will also ensure that we are using TUFLOWs latest/recommended/preferred viscosity implementation.
- The model will be refined in detail at the site of interest, which will include the incorporation of the site topographic survey data into the model grid. For this, we take an approach whereby we apply the difference between the topo survey data and the LiDAR to the grid so that we retain the detail of the LiDAR but correct the absolute elevation of the grid to match that of the topo. We find that this works exceptionally well for most situations and will of course review whether its appropriate here.

Do you have any issues with any of the three points above?

Kind regards,

Nigel West BSc MCIWEM

Principal Numerical Modeller

01227 833 855 | nigel@herringtonconsulting.co.uk



From: Flood Risk Analysis South <FRASouth@cyfoethnaturiolcymru.gov.uk>

Sent: 12 September 2024 11:46

To: Nigel West <nigel@herringtonconsulting.co.uk>

Subject: RE: Flood modelling at Lampeter using NRW model

Good Morning Nigel,

Thank you for contacting NRW.

We will provide some general advice which is below as we do not know your scope from your client. The list below is not exhaustive and intended only as a starting point for you to consider what may need to be done:

- Use the latest version of the software.
- New LIDAR is now available, and it is recommended that this is considered for any model update. It is for you to ensure that the data is suitable for modelling requirement.
- If new LIDAR is used the 1d/2d linkage data will need to be reviewed.
- The Bridge units with the model should be BB unless otherwise specified, note that current recommendation is that the form loss applied is 0.001. This will need to be checked.
- MasterMap® data may need updating.
- Depending on requirements the modeller may wish to reduce the extent that the model covers.
- The hydrology will need to be reviewed and updated.
- Additional survey data may be required if there are specific needs for the project.
- Climate Change allowances will need to be checked.
- If this is Flood Map Challenge further discussion are required.
- If the model outputs are for a planning a Flood Consequences Assessment (FCA) you wish to contact our Development Flood Risk team (DFRSouthPlanning@cyfoethnaturiolcymru.gov.uk).

If you have any further questions, please do not hesitate to get in contact.

Kind regards,

Alastair Papworth

Cynghorydd Dadansoddi Risg Llifogydd / Flood Risk Analysis Advisor

Dadansoddi Risg Llifogydd / Flood Risk Analysis

Yn Ardystiedig o ran Llythrennedd Carbon / Certified Carbon Literate

Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.



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naturalresources.wales

From: Nigel West <nigel@herringtonconsulting.co.uk>
Sent: Tuesday, September 10, 2024 9:25 AM
To: Flood Risk Analysis South <FRASouth@cyfoethnaturiolcymru.gov.uk>
Subject: Flood modelling at Lampeter using NRW model

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Rhybudd: Deilliodd yr e-bost hwn o'r tu allan i'r sefydliad. Peidiwch â chlicio dolenni, atodiadau agored nac sganio codau QR oni bai eich bod yn cydnabod yr anfonwr ac yn gwybod bod y cynnwys yn ddiogel.

Caution: This email originated from outside of the organisation. Do not click links, open attachments or scan QR Codes unless you recognise the sender and know the content is safe.

To whom it may concern,

We have recently been engaged by our client to refine the Lampeter Phase 2 model of 2017 to support a Flood Risk Assessment for a Planning Application for a commercial site near Lampeter. Our client, Lucien Group, have already engaged with you to retrieve the Lampeter model.

Separately, your online modelling guidance suggests that we should be engaging with you directly before we undertake any modelling work.

Can you confirm that this applies equally to the refinement of an existing model please?

Naturally, we would follow your existing online guidance, but also seek your input as part of this consultation so that we can ensure that we supply a model that is to your satisfaction.

Kind regards,

Nigel West BSc MCIWEM

Principal Numerical Modeller

01227 833 855 | nigel@herringtonconsulting.co.uk



Ein cyf/Our ref: CAS-267500-H8D8
Eich cyf/Your ref: A482 Cwmann

Brunel House,
2 Fitzalan Road,
Cardiff,
CF24 0EB

Dyddiad/Date: 20 November 2024

Annwyl Syr/Madam/Dear Sir/Madam,

STATUTORY PRE-APPLICATION CONSULTATION – TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE) (WALES) ORDER 2012 AS AMENDED

BWRIAD/PROPOSAL: The erection of a Class A1 retail foodstore with surface level car parking. landscaping and all associated development.

LLEOLIAD/LOCATION: Land at the A482, Cwmann, Lampeter

Thank you for providing a requisite notice to us under Article 2D of the above Order. We received a copy of your proposed application on 30 October 2024.

We have concerns with the application as proposed because inadequate information has been provided. To overcome these concerns, you should provide further information in your planning application regarding Flood Risk and Protected Sites. If this information is not provided, we may object to the planning application when formally consulted by the planning authority. Further details are provided below.

Flood Risk

Our Flood Risk Map confirms the application site lies within Zone C2 of the Development Advice Maps (DAM) contained in Technical Advice Note (TAN) 15: Development and Flood Risk (2004). The [Flood Map for Planning](#) identifies the application site to be at risk of flooding and is within Flood Zone 2 and 3 Rivers.

Section 6 of TAN15 requires the Local Planning Authority (LPA) to determine whether the development at this location is justified. Therefore, we refer you to the tests set out in section 6.2 of TAN15. If the LPA consider the proposal meets the tests set out in criteria (i) to (iii), then the final test (iv) is for you, the applicant to demonstrate through the submission of an Flood Consequence Assessment (FCA) that the potential consequences of flooding can be managed to an acceptable level.

We have reviewed the FCA (dated October 2024) submitted in support of the application. We note that the FCA states: "Site specific hydraulic modelling is currently being progressed which will eventually feed into this FCA". Until the hydraulic modelling has been finalised and included within the FCA, we are unable to fully comment.

We also note that the FCA that the significant depths of flooding in the 1% Annual Probability of Flooding (APF) Scenario when climate change is considered, and these depths are outside the tolerances of Table A1.15 of TAN15.

To mitigate the risk to the store, we note the proposal is to be built on stilts. This is not a viable proposal as it is possible that any voids underneath the store may be filled and therefore may result in a loss of floodplain storage.

When formally consulted on this application by the planning authority, we would require a detailed assessment of flood risk to and from the development.

Protected Sites

Foul Drainage

We note the application site is within the catchment of the River Teifi Special Area of Conservation (SAC). In line with our [*Advice to Planning Authorities for Planning Applications Affecting Nutrient Sensitive River Special Areas of Conservation \(28 June 2024\)*](#), under the Habitats Regulations, Planning Authorities must consider the impact of proposed developments on water quality within SAC river catchments. We therefore advise you to consider whether the proposals, as submitted, would increase the volume of foul discharge from the site in planning terms.

We note foul water disposal is proposed via the installation of a package treatment plant, rather than connecting to the mains sewer. However, according to our records, the site is within a sewered area.

The installation of private sewage treatment facilities within publicly sewered areas is not normally considered environmentally acceptable because of the greater risk of failures leading to pollution of the water environment compared to public sewerage systems.

Section 6.6.21 of Planning Policy Wales (2001) states 'Any development discharging domestic sewage should connect to the foul sewer where it is reasonable to do so. Development proposing the use of non-mains drainage schemes will only be considered acceptable where connection to the main sewer is not feasible...'

Government guidance on private sewerage in Welsh Government Circular 008/2018 stresses the first presumption must be to provide a system of foul drainage discharging into a public sewer. Only where having taken into account the cost and/or practicability it can be shown to the satisfaction of the Local Planning Authority that connection to a public sewer is not feasible, should non-mains foul sewage disposal solutions be considered.

Therefore, we advise proposals are amended to ensure the foul drainage is connected to the mains sewerage system or detailed evidence is provided to demonstrate it is not reasonable to connect.

You should thoroughly investigate the possibility of connecting to the foul sewer by taking the following steps:

- Formally approach the sewerage undertaker regarding a connection under Section 106 or a requisition under Section 98 of the Water Industry Act (WIA) 1991;

- Serve notice for connection under Section 106 of the WIA 1991 if the sewerage undertaker has refused connection;
- Provide details of the reasons given by the sewerage undertaker if it has refused connection under section 98 or section 106 of the WIA 1991 and confirmation they have appealed against this decision;
- Demonstrate it is not reasonable to connect to the public foul sewer;
- Where it is not reasonable to connect to the public foul sewer, demonstrate they have considered requesting that the sewerage undertaker adopt their proposed system.

You should be aware that should a connection to the mains sewer not be feasible, you will also need to demonstrate the proposal would not pose an unacceptable risk to the water environment. Welsh Government Circular 008/2018 advises a full and detailed consideration be given to the environmental criteria listed under paragraph 2.6 of the Circular, in order to justify the use of private sewerage.

Furthermore, we refer you to the section in our [Advice](#) titled '*What does this mean for development proposals involving connection to public wastewater treatment works*'.

Pollution

The site lies within approx. 28m of the Afon Teifi Special Area of Conservation (SAC) and Afon Teifi Site of Scientific Interest (SSSI).

We have concerns that harm from the proposed development on the protected site cannot be ruled out.

Due to the proximity of the site to the protected site careful consideration will need to be given to pollution prevention measures to be implemented during construction. We therefore advise a Construction Environmental Management Plan (CEMP) should be submitted to support the application and used to inform the Authority's test of likely significant effects for the SAC. We advise this should include the following information.

- Construction methods: details of materials, how waste generated will be managed;
- General Site Management: details of the construction programme including timetable, details of site clearance; details of site construction drainage, containments areas, appropriately sized buffer zones between storage areas (of spoil, oils, fuels, concrete mixing and washing areas) and any watercourse or surface drain.
- Biodiversity Management: details of tree and hedgerow protection; invasive species management and treatment plan in particular for the Japanese Knotweed present on site; species and habitats protection, avoidance and mitigation measures.
- Soil Management: details of topsoil strip, storage and amelioration for re-use.
- CEMP Masterplan: details of the extent and phasing of development; location of landscape and environmental resources; design proposals and objectives for integration and mitigation measures.
- Control of Nuisances: details of restrictions to be applied during construction including timing, duration and frequency of works; details of measures to minimise noise and vibration from piling activities, for example acoustic barriers; details of dust control measures; measures to control light spill and the conservation of dark skies.

- Resource Management: details of fuel and chemical storage and containment; details of waste generation and its management; details of water consumption, wastewater and energy use
- Traffic Management: details of site deliveries, plant on site, wheel wash facilities
- Pollution Prevention: demonstrate how relevant Guidelines for Pollution Prevention and best practice will be implemented, including details of emergency spill procedures and incident response plan.
- Details of the persons and bodies responsible for activities associated with the CEMP and emergency contact details
- Landscape/ecological clerk of works to ensure construction compliance with approved plans and environmental regulations.

The Local Planning Authority (LPA) is the Competent Authority for the purposes of the Conservation of Habitats and Species Regulations 2017. As such, they must not agree to any plan or project unless they are certain it will not adversely affect the integrity of a Special Area of Conservation (SAC).

The LPA should carry out a test of likely significant effects (TLSE) for the SAC, which is required under Regulation 63 of the Conservation of Habitats and Species Regulations 2017. This test applies to impacts on the SACs from the proposed works, either alone or in combination with other plans and projects.

If the test concludes there is likely to be a significant effect then an Appropriate Assessment of the impacts on the SAC from the proposed works, either alone or in combination with other plans and projects, will be required. We would be able to assist with that assessment in our role as the Statutory Nature Conservation Body under the above Regulations.

Site of Special Scientific Interest

The Wildlife and Countryside Act 1981 (as amended) places a duty on public authorities in exercising their functions, so far as this is likely to affect the flora, fauna, geological or physiographical features of a Site of Special Scientific Interest (SSSI), to take reasonable steps consistent with the proper exercise of their functions to further the conservation and enhancement of those features.

By satisfying the requirements regarding the SACs, as indicated above, it is likely the requirements for the SSSIs will also be met.

We refer you to our [website](#) for further advice.

Protected Species

Our records show there may be protected species in the vicinity of the site, with records of water voles in the vicinity. We also note the Preliminary Ecological Appraisal (dated 11/09/2024) has identified the need for further surveys to determine presence or absence of Great Crested Newts in 2 nearby ponds. We advise liaison with the LPA's ecologist to discuss and agree the scope of any surveys required. We refer you to our [website](#) for further advice.

Other Matters

Please note, if further information is prepared to support an application, it may be necessary for us to change our advice in line with the new information.

Our comments above only relate specifically to matters included on our checklist, *Development Planning Advisory Service: Consultation Topics* (September 2018), which is published on our [website](#). We have not considered potential effects on other matters and do not rule out the potential for the proposed development to affect other interests.

In addition to planning permission, you are advised to ensure all other permits/consents/licences relevant to the development are secured. Please refer to our [website](#) for further details.

Further advice on the above matters could be provided prior to your planning application being submitted, however there would be a charge for this service. Additional details are available on our [website](#).

If you have any queries on the above, please do not hesitate to contact us.

Yn gywir / Yours faithfully,

Harriet Power

Cynghorydd - Cynllunio Datblygu/Advisor - Development Planning
Cyfoeth Naturiol Cymru/Natural Resources Wales

E-bost/E-mail: swplanning@cyfoethnaturiolcymru.gov.uk

Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi./Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.