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Flood Consequence Assessment

Rackery Lane, Llay Industrial Park, Wrexham

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Executive Summary

The proposed commercial development would be expected to remain dry in all but the most extreme conditions, the flood risk to the site can be considered to be limited, with a low or less annual probability of flooding from all sources. Providing the recommendations made in this Flood Consequence Assessment (FCA) are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable and the development would be in accordance with the requirements of Technical Advice Note 15 Development and Flood Risk (TAN15) and the statutory development plan.

This FCA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of TAN15. The development should not therefore be precluded on the grounds of flood risk.

1. Introduction

1.1 Background

This Flood Consequence Assessment (FCA) has been prepared by Tier Consult to support a planning application for the proposed development at Rackery Lane, Llay Industrial Park, Wrexham.

This FCA has been carried out in accordance with guidance contained in Technical Advice Note 15 Development and Flood Risk (TAN15) and associated Development Advice Maps (DAMs). This FCA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

It is recognised that developments which are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. The development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues.

1.2 Planning Policy Wales

Planning Policy Wales (11th edition), 2021[1], sets out the land use planning policies of the Welsh Government. Chapter 6 'Distinctive and Natural Places' outlines the Welsh Government's objectives in terms of addressing flood risk. The section titled 'Development and Flood Risk the following is stated:

"The climate emergency is likely to increase the risk of flooding as a result of sea-level rises, increased storminess and more intense rainfall. Flooding as a hazard involves the consideration of the potential consequences of flooding, as well as the likelihood of an event occurring. Planning authorities should adopt a precautionary approach of positive avoidance of development in areas of flooding from the sea or from rivers. Surface water flooding will affect choice of location and the layout and design of schemes and these factors should be considered at an early stage in formulating development proposals.

The continued construction of hard engineered flood defences to protect development in areas of floodplain is not sustainable. Government resources for flood and coastal defences are directed at protecting existing developments and are not available to provide defences in anticipation of future development. Account should be taken of shoreline management plans and measures such as managed realignment, the creation of washlands and flood plain restoration as alternatives to engineered flood defences.

Development Advice Maps enable planning authorities to take a strategic approach to flood risk and consider the catchment as a whole by providing a preliminary representation of flood risks, which inform decisions on the location of new development and the requirements necessary to support any

[1] https://www.gov.wales/planning-policy-wales

applications which may be proposed. Together with flood consequences assessments they should assist understanding of how natural and man-made defences work as integral components of places and provide a means by which the cumulative effects of development can begin to be understood. Development should reduce, and must not increase, flood risk arising from river and/or coastal flooding on and off the development site itself. The priority should be to protect the undeveloped or unobstructed floodplain from development and to prevent the cumulative effects of incremental development.

In areas of flood plain currently unobstructed, where water flows in times of flood, built development should be wholly exceptional and limited to essential transport and utilities infrastructure. Such infrastructure should be designed and constructed so as to remain operational even at times of flood, to result in no net loss of floodplain storage, to not impede water flows and to not increase flood risk elsewhere. TAN 15: Development and Flood Risk should be referred to for further policy advice on development and flood risk. It will be important to note that developments located within flood risk areas remain at risk from flooding even if mitigation measures are applied.

Planning authorities should be aware of the risk of surface water flooding, usually caused by heavy rainfall, and ensure developments are designed and planned to minimise potential impacts. Development should not cause additional run-off, which can be achieved by controlling surface water as near to the source as possible by the use of SuDS. Care should be taken in places of shallow groundwater or where flooding is caused by combined surface and groundwater processes. In such situations direct infiltration SuDs may not be appropriate. Consultation with drainage bodies and NRW should be undertaken and relevant evidence and information drawn from Area Statements taken into account.

New or improved flood defences in coastal and/or riverside locations should be carefully planned, ensuring all potential environmental effects, both on and off-shore, and relevant Shoreline Management Plan policies are taken into account. Flood defence works can provide opportunities to achieve wider social, economic and environmental benefits, which should be maximised where possible. Nature based solutions should be the first consideration given the opportunity to deliver other multiple benefits, including habitat creation, biodiversity enhancement and water quality improvements. Overall, green infrastructure opportunities can benefit ecosystem resilience and provide opportunities for leisure facilities or renewable energy generation.

The ability of emergency services to respond to flood events should be taken into account when considering if a development in a flood risk area is appropriate. This may involve consultation with emergency planners, local resilience forums and other professional partners such as fire rescue, police and ambulance services."

1.3 Technical Advice Note 15 (TAN15)

Planning Policy Wales is supplemented by a series of Technical Advice Notes (TAN). Technical guidance on development and flood risk is provided by TAN15[2]. TAN15 was introduced in 2004 by the Welsh Assembly Government. It is technical guidance related to development planning and flood risk

[2] https://www.gov.wales/technical-advice-note-tan-15-development-and-flood-risk-2004

using a sequential characterisation of risk based on the Welsh Government's Development and Flood Risk Advice Map (DAM). Its initial requirement is to identify the flood zones and vulnerability classification relevant to the proposed development, based on an assessment of current and future conditions.

One of the key aims of TAN15 is to ensure that flood risk is taken into account at all stages of the planning process; to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk.

It advises that where new development is exceptionally necessary in areas of higher risk, this should be safe, without increasing flood risk elsewhere, and where possible, reduce flood risk overall. A risk based approach is adopted at stages of the planning process, applying a source pathway receptor model to planning and flood risk. To demonstrate this, an FCA is required and should include:

- whether a proposed development is likely to be affected by current or future flooding from all sources;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate; and
- satisfy the justification test, where required, including the acceptability of consequences.

A revised TAN15 is due to be implemented in the near future. This is to be supported by the new Flood Map for Planning (FMfP), which includes climate change information to show how this will affect flood risk extents over the next century. It shows the potential extent of flooding assuming no defences are in place. The coming into force of the new TAN15 and the FMfP has been suspended due to a further consultation on the TAN[3], [4].

The FMfP has no official status for planning purposes at the moment however, Natural Resources Wales may use the FMfP data as the 'best available information' on flood risk to inform their planning advice. As confirmed in the letter from Welsh Government dated 15 December 2021[5], the FMfP represents better and more up-to-date information on areas at flood risk than the DAM.

1.4 Natural Resources Wales

The Flood and Water Management Act 2010 gives Natural Resources Wales a strategic overview role for all forms of flooding and coastal erosion. They also have direct responsibility for the prevention, mitigation and remediation of flood damage for main rivers and coastal areas. Natural Resources Wales is the statutory consultee with regards to flood risk and planning.

Natural Resources Wales Flood Risk Standing Advice and TAN15 have been consulted and reviewed during this FCA. Information regarding the current flood risk at the site, local flood defences and flood water levels has been obtained from Natural Resources Wales.

[3] https://www.gov.wales/technical-advice-note-tan-15-development-flooding-and-coastal-erosion
[4] https://www.gov.wales/written-statement-tan-15-timeline
[5] https://www.gov.wales/sites/default/files/publications/2021-12/letter-local-authorities-on-the-pause-of-tan-15-15-december-2021.pdf

Recommended precautionary sensitivity ranges for peak rainfall intensities, peak river flows and sea level rise are outlined in the following documents CL-03-16 - Climate Change Allowances for Planning Purposes[6], Flood Consequence Assessments: Climate change allowances[7] and Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales[8].

The 9th of January 2014 Welsh Government letter to all Chief Planning Officers (CPO) in Wales and CL-03-16 - Climate Change Allowances for Planning Purposes clarifies and refers to the Natural Resources Wales recommendations that the lifetime of development for residential development is 100 years, and for other development it is considered to be 75 years.

1.5 Wrexham County Borough Council

Wrexham County Borough Council is the Local Planning Authority (LPA), the Lead Local Flood Authority (LLFA), the SuDS Approving Body (SAB) and therefore, has responsibilities for 'local flood risk', which includes surface runoff, groundwater and ordinary watercourses. Planning guidance written by Wrexham County Borough Council regarding flood risk was consulted to assess the mitigation policies in place. The Wrexham County Borough Council Preliminary Flood Risk Assessment (PFRA) which covers the site has been reviewed.

Wrexham Local Development Plan (2013-2028) (adopted 20/12/23)

The Wrexham LDP was adopted by the Council on 20/12/23 and covers the period 2013 to 2028. It forms part of the statutory development plan alongside Future Wales: The National Plan 2040. The remaining part of the statutory development plan will be the Strategic Development Plan (SDP) for North Wales, once prepared and adopted.

The Council will use the LDP and Future Wales as the primary basis for making decisions on planning applications and development proposals.

Policy SP19, *Climate Change,* states that to mitigate the impacts of climate change, development proposals will need to demonstrate that they avoid areas susceptible to flood risk in the first instance, in accordance with the sequential approach set out in national guidance. Development which would increase flood risk will be prevented. The potential effects of climate change should be assessed when preparing a Flood Consequence Assessment for development sites.

Policy DM1, *Development Management Considerations,* states that development should not increase the risk of flooding but make adequate provision for sustainably dealing with foul and surface water drainage and not result in an unacceptable impact upon the water environment.

Wrexham Preliminary Flood Risk Assessment (2011)

Wrexham County Borough Council, as the LLFA, is required by the Flood Risk Regulations (2009) and EU Floods Directive 2007/60/EC to prepare a Preliminary Flood Risk Assessment (PFRA). PFRAs assess the risk associated with all types of flooding and provide the information required to identify the amount of development permitted in an area; how drainage systems in the area should function and

[6] https://gov.wales/sites/default/files/publications/2018-11/cl0316-climate-change-allowances.pdf
[7] https://gov.wales/sites/default/files/publications/2018-11/flood-consequence-assessments.pdf
[8] https://gov.wales/sites/default/files/publications/2021-09/adapting-to-climate-change-guidance-for-flood-and-coastal-erosion-risk-management-authorities-in-wales.pdf

also how risks in vulnerable areas can be reduced and/or mitigated. The purpose of the PFRA is to assess and map all known sources of flood risk including fluvial, surface water, sewer, groundwater and all impounded water bodies, taking into account future climate change predictions.

The PFRA provides a detailed understanding of flood risks across the borough from all sources, surface water flooding is the most prominent cause of flooding within the County Borough. The report identified no records of past groundwater flooding within the County Borough and there are no historic records of canal overtopping or flooding of a canal within the Borough.

1.6 Welsh Water/Dŵr Cymru

Welsh Water/Dŵr Cymru is responsible for the disposal of wastewater and supply of clean water for this area. Information with regards to sewer and water main flooding contained within the Wrexham County Borough Council Preliminary Flood Risk Assessment (PFRA) has been consulted as part of this FCA. All Water Companies have a statutory obligation to maintain a register of properties/areas which are at risk of flooding from the public sewerage system, and this is shown on the DG5 Flood Register.

2. Location & Description

2.1 Site Location

The site is located on Rackety Lane, Llay Industrial Park, Wrexham (see Figure 2.1).

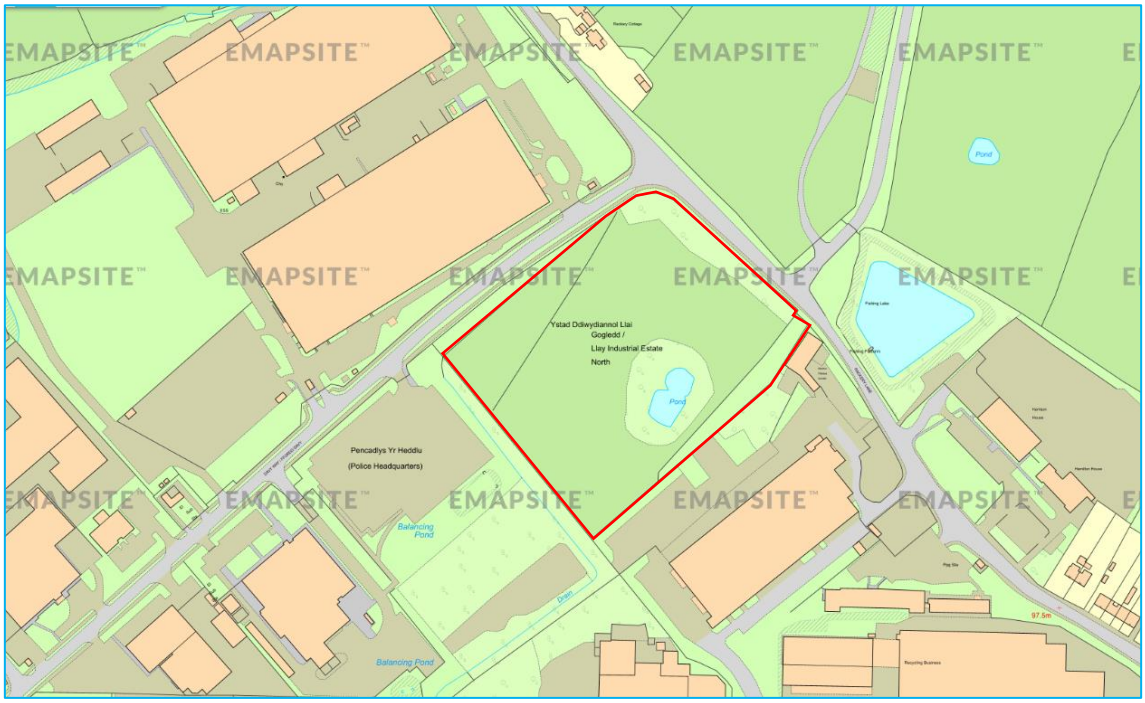


Figure 2.1 - Site Location

2.2 Existing Development

The site comprises an open field of grassland with pond.

2.3 Proposed Development

Outline planning permission with all matters reserved for an industrial development of up to 11,613 sq m of Class B1, B2 and / or B8 employment floorspace (including ancillary office accommodation) together with associated infrastructure and works (including estate roads, yards, parking, footpaths, internal hard and soft landscaping and drainage works).

The application is accompanied by a parameters plan for approval, as well as two indicative layouts (for illustrative purposes only) to demonstrate how employment development could come forward on the site. However, matters regarding access, appearance, landscaping, layout and scale will be agreed at a later stage through the submission of a reserved matters application (see Appendix A).

2.4 Ground Levels

A topographical survey of the site has recently been undertaken, as shown in Appendix B. The site slopes gently from north to south with a maximum ground level of 100.48 metres Above Ordnance Datum (mAOD) to the north and a minimum ground level of 97.47mAOD to the south of the site.

2.5 Catchment Hydrology/Drainage

There is a small pond located on the site and several ponds located within the vicinity of the site, the closest being 35m to the north east of the site. There is a drainage ditch located adjacent to the south west boundary of the site. The River Alun is located approximately 1.33km to the west of the site.

2.6 Ground Conditions

The British Geological Survey (BGS) maps show that the superficial deposits underlying the site comprise Till, Devensian - diamicton. The bedrock geology beneath the site comprises the Salop Formation - mudstone, sandstone and conglomerate.

3. Assessment of Flood Risk

3.1 Sources of Flooding

All sources of flooding have been considered, these are fluvial (river) flooding, tidal (coastal) flooding, groundwater flooding, surface water (pluvial) flooding, sewer flooding and flooding from artificial drainage systems/infrastructure failure.

3.2 Climate Change

Projections of future climate change, in the UK, indicate more frequent, short-duration, high intensity rainfall and more frequent periods of long duration rainfall. Guidance included within TAN15 recommends that the effects of climate change are incorporated into FCA. Recommended precautionary sensitivity ranges for peak rainfall intensities and peak river flows are outlined in the Welsh Government Guidance, CL-03-16 - Climate change allowances for Planning purposes.

The 9th January 2014 Welsh Government letter to all Chief Planning Officers (CPO) in Wales and CL-03-16 - Climate change allowances for Planning purposes clarifies and refers to the Natural Resources Wales recommendations that the lifetime of development for residential development is 100 years, and for other development it is considered to be 75 years (i.e. 2098).

3.3 Development Advice Map

The Development Advice Map (DAM) which accompanies TAN15 confirms that the site is located within Zone A: Considered to be at little or no risk of fluvial or tidal/coastal flooding (see Figure 3.1). Used to indicate that the justification test is not applicable and there is no need to consider flood risk further.

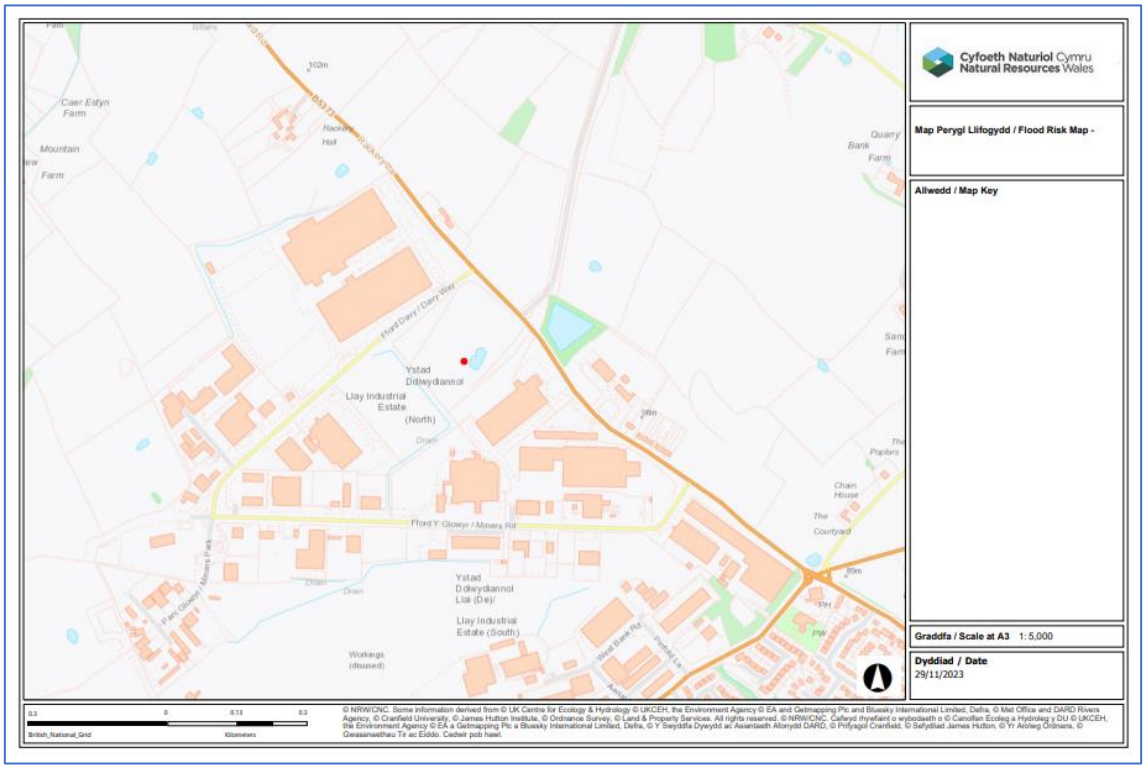


Figure 3.1 - Development Advice Map

Table 3.1 - Development Advice Map Zones

Description of Zone	Zone	Use within the precautionary Framework
Considered to be at little or no risk of fluvial or tidal/coastal flooding.	A	Used to indicate that justification test is not applicable and no need to consider flood risk further.
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B	Used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further.
Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal)	C	Used to indicate that flooding issues should be considered as an integral part of decision making by the application of the justification test including assessment of consequences.
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1	Used to indicate that development can take place subject to application of justification test, including acceptability of consequences.

Areas of the floodplain without significant flood defence infrastructure.	C2	Used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered.

3.4 Flood Map for Planning

The Flood Map for Planning (FMfP) shows that the site is located within Flood Zone 1 for flooding from rivers and the sea (see Figure 3.2). However, a small proportion of the site is located within Flood Zones 2 and 3 for flooding from surface water and small watercourses (see Figure 3.3). Table 3.2 provides details of the FMfP Flood Zones.

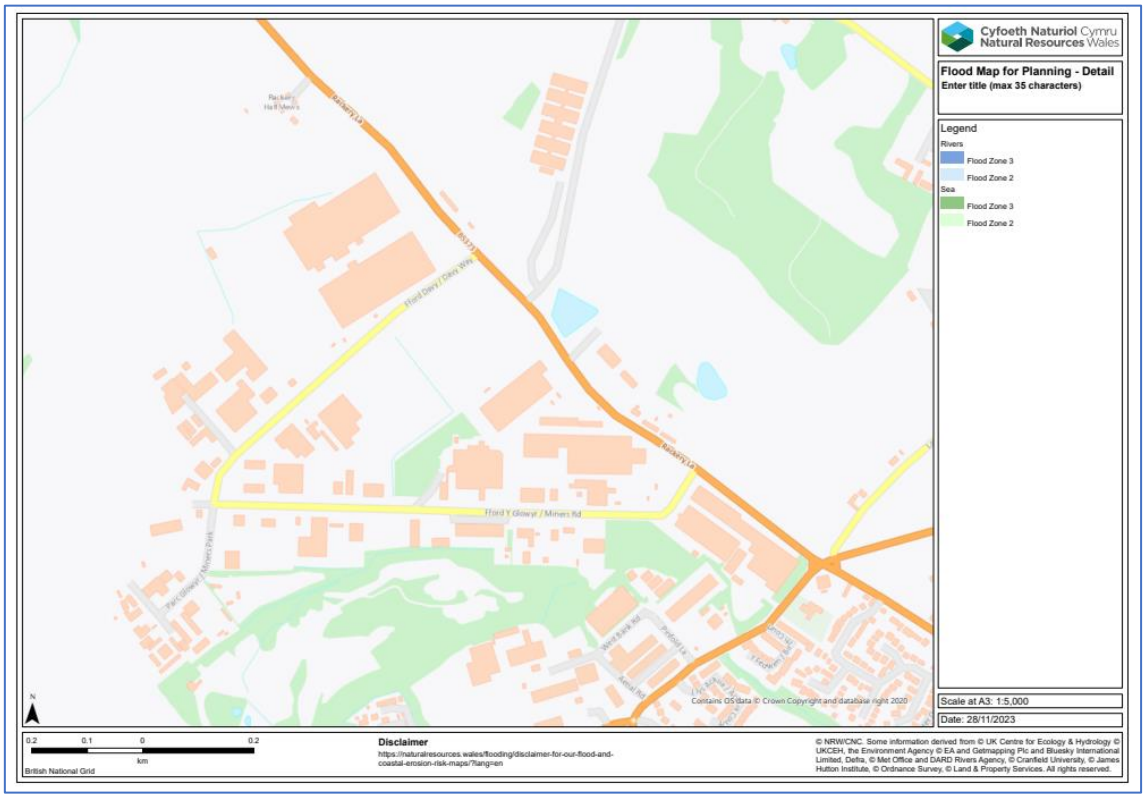


Figure 3.2 - Flood Map for Planning: Rivers and Sea

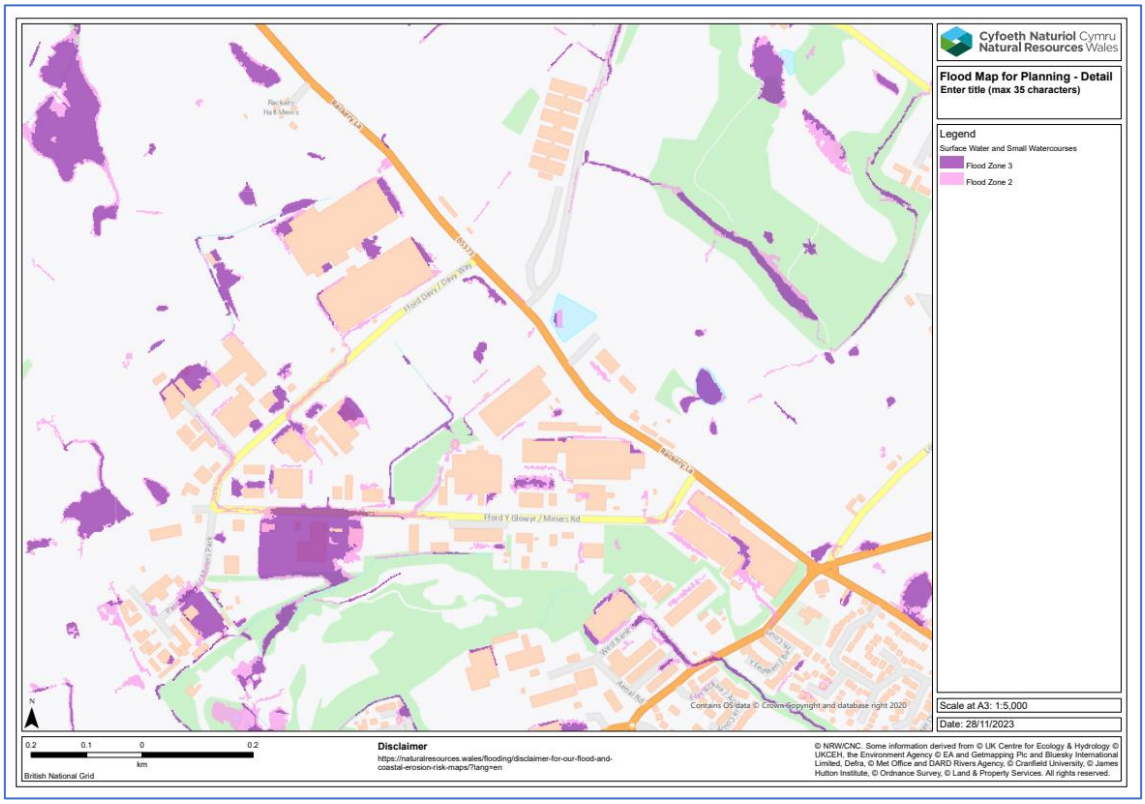


Figure 3.3 - Flood Map for Planning: Surface and Small Watercourses

Table 3.2 - Flood Map for Planning Flood Zones

Flood Zone	Explanation
Rivers - Flood Zone 2	Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.
Rivers - Flood Zone 3	Areas with more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.
Sea - Flood Zone 2	Areas with 0.1% to 0.5% (1 in 1000 to 1 in 200) chance of flooding from the sea in a given year, including the effects of climate change.
Surface Water and Small Watercourses - Flood Zone 2	Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.
Surface Water and Small Watercourses - Flood Zone 3	Areas with more than 1% (1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.

3.5 Flood Risk Vulnerability

Table 3.1 describes the composition and use of the DAM zones to control and manage development. Applying the Flood Risk Vulnerability Classification in Figure 2 of TAN15, the proposed development is classified as 'less vulnerable'. In TAN15 (Section 9.0) appropriate uses have been identified for the DAM zones. The proposed development is classified as 'less vulnerable', TAN15 states that 'less vulnerable' uses are appropriate at this location.

3.6 Historic Flooding

The site is not located within the Natural Resources Wales historic flood outline for this area. The British Hydrological Society "Chronology of British Hydrological Event" has no information on flooding within the vicinity of the site. No other historical records of flooding for the site have been recorded. Therefore, it has been concluded that the site has not historically flooded.

3.7 Existing and Planned Flood Defence Measures

It is understood that there are no flood defences in this area.

3.8 Fluvial (river) Flooding

The DAM and the FMfP show that the site is not at risk of fluvial flooding (see Figures 3.1 and 3.2). It can therefore be concluded that the risk of fluvial flooding is not significant.

3.9 Tidal (coastal) Flooding

The DAM and the FMfP show that the site is not at risk of tidal flooding (see Figures 3.1 and 3.2). It can therefore be concluded that the risk of tidal flooding is not significant.

3.10 Groundwater Flooding

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded. Groundwater flooding tends to occur sporadically in both location and time. When groundwater flooding does occur, it tends to mostly affect low-lying areas, below surface infrastructure and buildings (for example, tunnels, basements and car parks) underlain by permeable rocks (aquifers).

The susceptibility of the site to groundwater flooding, based on the underlying geological conditions, is very low and the site is not located within an area at risk of flooding from groundwater. There are no records of groundwater flooding at or near to the site. It can therefore be concluded that the risk of groundwater flooding is not significant.

3.11 Surface Water (pluvial) Flooding

The soil condition at the site and within the vicinity of the site and the topography of the site suggest that the site is relatively well drained and surface water flooding would not be expected to accumulate

to any significant depths. Surface water flooding tends to occur sporadically in both location and time such surface water would tend to be confined to the streets around the development.

The FMfP show that the majority of the site is not at risk of surface water flooding (see Figure 3.3). However, a small proportion of the site is located within Flood Zones 2 and 3 for flooding from surface water and small watercourses with a chance of flooding of between 1 in 1000 (0.1%) and greater than 1 in 100 (1%) years, including the effects of climate change. This is associated with low spots and the pond located on the site.

The area of surface water flooding identified to the north of the site will be located on an area of soft landscaping and the surface water flood risk associated with the existing pond will not occur as the pond will be filled in. Access to the buildings will be maintained. It can therefore be concluded that the risk of surface water flooding is of low significance.

3.12 Sewer Flooding

Sewer flooding occurs when urban drainage networks become overwhelmed and maximum capacity is reached. This can occur if there is a blockage in the network causing water to back up behind it or if the sheer volume of water draining into the system is too great to be handled. Sewer flooding tends to occur sporadically in both location and time, such flood flows would tend to be confined to the streets around the development.

Any sewer will inevitably have a limited capacity so in extreme conditions there would be surcharges, which may in turn cause flooding. Flood flows could also be generated by burst water mains, but these would tend to be of a restricted and much lower volume than weather generated events and so can be discounted for the purposes of this assessment. Given the design parameters normally used for drainage design in recent times and allowing for some deterioration in the performance of the installed systems, which are likely to have been in place for many years, an appropriate flood risk probability from this source could be assumed to have a return period in the order of 1 in 10 to 1 in 30 years.

The provision of adequate level difference between the ground floors and adjacent ground level would reduce the annual probability of damage to property from this source to 1 in 100 years or less. Therefore, sewer flooding poses a low flood risk to the site. It can therefore be concluded that the risk of sewer flooding is not significant.

3.13 Flooding from Artificial Drainage Systems/Infrastructure Failure

There are no other nearby artificial water bodies including the small ponds, water channels and artificial drainage systems that could be considered a flood risk to the site. The Natural Resources Wales Reservoir flood map shows that the site is not at risk of reservoir flooding (see Figure 3.4). The risk of flooding from these sources is considered to be not significant.

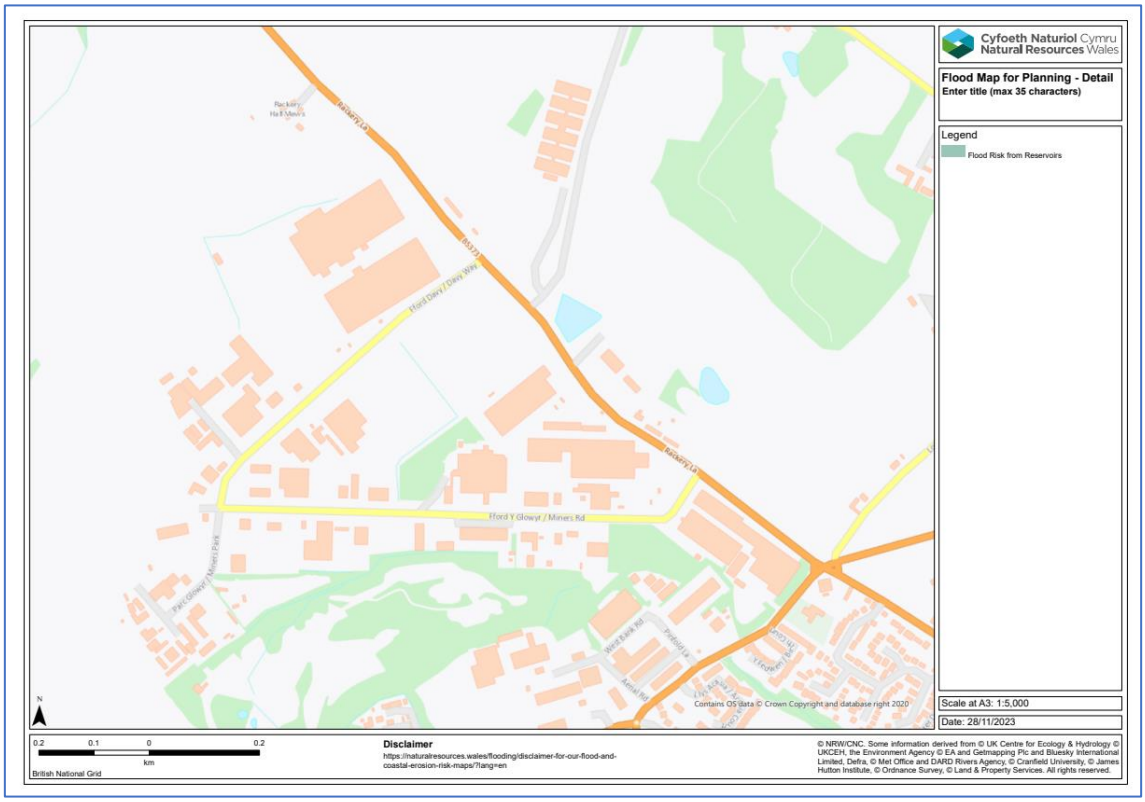


Figure 3.4 - Natural Resources Wales Flood Risk Map: Reservoir

3.14 Effects of the Development on Flood Risk

The proposed development will have no impact on the movement of floodwater across the site. The overall direction of the movement of water will be maintained within the developed site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed. There will be no increase in the floodwater levels due to the proposed development. There will be no loss in flood storage capacity and no change in the on-site and off-site flood risk. Therefore, the site is compliant with A1.12 of TAN15 and will not increase flood risk elsewhere.

3.15 Summary of Site-Specific Flood Risk

A summary of the sources of flooding and a review of the risk posed by each source at the site is shown in Table 3.3.

The site is not at risk of flooding from a major source (e.g. fluvial and/or tidal). The DAM which accompanies TAN15 confirms that the site is located within Zone A: Considered to be at little or no risk of fluvial or tidal/coastal flooding. Used to indicate that justification test is not applicable and no need to consider flood risk further. The FMfP shows that the site is located within Flood Zone 1 for flooding from rivers and the sea. A secondary flooding source has been identified which may pose a low significant risk to the site. This is:

- Surface water flooding

The area of surface water flooding identified to the north of the site will be located on an area of soft landscaping and the surface water flood risk associated with the existing pond will not occur as the pond will be filled in. Access to the buildings will be maintained. It can therefore be concluded that the risk of surface water flooding is of low significance.

The proposed development is classified as 'less vulnerable', TAN15 states that 'less vulnerable' uses are appropriate at this location. Furthermore, the site is compliant with A1.12 of TAN15 and will not increase flood risk elsewhere.

The flood risk at the site, will be further managed and mitigated by using a number of risk management techniques, and mitigation strategies to manage and reduce the overall flood risk at the site. In conclusion, the flood risk to the site can be considered to be limited, with a low or less annual probability of flooding from all sources.

Table 3.3 - Risk Posed by Flooding Sources

Sources of Flooding	Potential Flood Risk	Potential Source	Probability/Significance
Fluvial (river) Flooding	No	None Reported	Not significant
Tidal (coastal) Flooding	No	None Reported	Not significant
Groundwater Flooding	No	None Reported	Not significant
Surface Water (pluvial) Flooding	Yes	Low Spots	Low Significance
Sewer Flooding	No	None Reported	Not significant
Flooding from Artificial Drainage Systems/Infrastructure Failure	No	None Reported	Not significant

4. Risk Management

4.1 Introduction

In DAM Zone A, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout, form of the development and the use of flood mitigation measures including SuDS techniques. The flooding sources will have to be mitigated on the site by using a number of techniques, and mitigation strategies to manage and reduce the overall flood risk at the site. These will be used to ensure the development will be safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the proposed development on flood risk generally; and;
- Minimal disruption to natural heritage.

4.2 Minimum Floor Level

There is no minimum finished floor level proposed as a result of flooding. However, it is recommended that generally all buildings are located above the highways by 150mm to enable the full capacity of any secondary flood conveyance to be utilised.

4.3 Flood Resilience and Resistance

The development of the layout should always consider that the site is potentially at risk from an extreme event and as such the implementation of flood resilience and resistance methods should be assessed. Relatively simple measures such as raising utility entry points, using first floor or ceiling down electrical circuits and sloping landscaping away from properties can be easily and economically incorporated into the development of the site.

4.4 Access and Egress

The site and surrounding area is not located within the floodplain therefore a permanently safe and dry access can be maintained. Access to the buildings can also be maintained.

4.5 Flooding Consequences

The mitigation measures detailed above show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable. In conclusion, the flood risk to the site can be considered to be limited, with a low annual probability of flooding from all sources.

5. Justifying the Location of the Development

5.1 Justification Test

The Justification Test sets out the details required to justify siting a new development in an area believed to be at risk of flooding and is defined in Section 6 of TAN15. The site is located within DAM Zone A: Considered to be at little or no risk of fluvial or tidal/coastal flooding. Used to indicate that justification test is not applicable and no need to consider flood risk further. The FMfP shows that the site is located within Flood Zone 1 for flooding from rivers and the sea. The development proposals should be considered by the LPA to satisfy the Justification Test as set out in TAN15.

6. Summary and Conclusion

6.1 Introduction

This report presents an FCA in accordance with TAN15 for the proposed development on Rackery Lane, Llay Industrial Park, Wrexham. This FCA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will need to be managed so that the development remains safe throughout the lifetime, taking climate change into account.

6.2 Flood Risk

The site is not at risk of flooding from a major source (e.g. fluvial and/or tidal). The DAM which accompanies TAN15 confirms that the site is located within Zone A: Considered to be at little or no risk of fluvial or tidal/coastal flooding. Used to indicate that justification test is not applicable and no need to consider flood risk further. The FMfP shows that the site is located within Flood Zone 1 for flooding from rivers and the sea. A secondary flooding source has been identified which may pose a low significant risk to the site. This is:

- Surface water flooding

The area of surface water flooding identified to the north of the site will be located on an area of soft landscaping and the surface water flood risk associated with the existing pond will not occur as the pond will be filled in. Access to the buildings will be maintained. It can therefore be concluded that the risk of surface water flooding is of low significance.

The proposed development is classified as 'less vulnerable', TAN15 states that 'less vulnerable' uses are appropriate at this location. Furthermore, the site is compliant with A1.12 of TAN15 and will not increase flood risk elsewhere.

The flood risk at the site, will be further managed and mitigated by using a number of risk management techniques, and mitigation strategies to manage and reduce the overall flood risk at the site. In conclusion, the flood risk to the site can be considered to be limited, with a low or less annual probability of flooding from all sources.

6.3 Risk Management

The flooding sources will be managed on the site by using a number of mitigation strategies to manage and reduce the overall flood risk at the site and will ensure the development will be safe. Measures to be used comprise:

Minimum Floor Level - There is no minimum finished floor level proposed as a result of flooding. However, it is recommended that generally all buildings are located above the highways by 150mm to enable the full capacity of any secondary flood conveyance to be utilised.

Flood Resilience and Resistance - The development of the layout should always consider that the site is potentially at risk from an extreme event and as such the implementation of flood resilience and resistance methods should be assessed. Relatively simple measures such as raising utility entry points, using first floor or ceiling down electrical circuits and sloping landscaping away from properties can be easily and economically incorporated into the development of the site.

Access and Egress - The site and surrounding area is not located within the floodplain therefore a permanently safe and dry access can be maintained. Access to the buildings can be maintained.

6.4 Justifying the Location of the Development

The proposed development should be considered by the LPA to satisfy the Justification Test as set out in TAN15.

6.5 Conclusion

In conclusion, the proposed commercial development would be expected to remain dry in all but the most extreme conditions, the flood risk to the site can be considered to be limited, with a low or very low annual probability of flooding from all sources. Providing the recommendations made in this FCA are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable and the development would be in accordance with the requirements of TAN15 and the statutory development plan.

This FCA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of TAN15. The development should not therefore be precluded on the grounds of flood risk.

Appendix A – Site Layout 1 and Indicative Site Layout 2



SCHEDULE OF ACCOMMODATION

Unit Name	Ground Floor GIA	First Floor (Offices) GIA	Overall GIA	Overall GEA	Car Parking (inc. disabled spaces)	Parking Ratio
Unit 01	9,550 ft²/ 888 m²	950 ft²/ 89 m²	10,500 ft²/ 977 m²	11,660 ft²/ 1,082 m²	20 (2)	1:50
Unit 02	28,000 ft²/ 2,602 m²	3,000 ft²/ 279 m²	31,000 ft²/ 2,881 m²	33,170 ft²/ 3,082 m²	36 (3)	1:80
Unit 3a	6,490 ft²/ 603 m²	1,520 ft²/ 142 m²	8,010 ft²/ 745 m²	8,850 ft²/ 822 m²	11 (1)	1:67
Unit 3b	4,800 ft²/ 446 m²	750 ft²/ 70 m²	3,925 ft²/ 365 m²	6,090 ft²/ 566 m²	8 (1)	1:45
Unit 3c	4,800 ft²/ 446 m²	750 ft²/ 70 m²	5,550 ft²/ 516 m²	6,090 ft²/ 566 m²	8 (1)	1:64
Unit 3d	4,890 ft²/ 455 m²	750 ft²/ 70 m²	5,640 ft²/ 525 m²	6,300 ft²/ 565 m²	12 (1)	1:43
Unit 04	40,470 ft²/ 3,760 m²	4,170 ft²/ 388 m²	44,640 ft²/ 4,148 m²	47,100ft²/ 4,370 m²	63 (3)	1:65
Total Development			**109,265 ft²/ 10,157 m²**	**119, 260ft²/ 11,053m²**	**158 (12)**	**1:64**

NOTES

AEWTP026C

- All dimensions and levels are to be checked on site.
- Any discrepancies are to be reported to the architect before any work commences
- This drawing shall not be scaled to ascertain any dimensions. Work to figured dimensions only.
- This drawing shall not be reproduced without express written permission from AEW.
- Title overlay drawings and ownership boundaries are produced using all reasonable endeavors. AEW cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.
- All works are to be undertaken in accordance with Building Regulations and the latest British Standards.
- All proprietary materials and products are to be used strictly in accordance with the manufacturers recommendations.

CDM 2015

Client notified of duties:

Principal Designer: **tbc**

Unless noted below, all known hazards have been highlighted on the drawing:

- Red line site boundary: 3.23ha / 7.98 acres (as Title CYM589598)
- Existing dense vegetation and CAT-C trees retained where possible
- Potential new opportunity planting
- Pond retained / potential attenuation
- Existing pond to be relocated subject to confirmation by Ecologist
- CAT-A Tree and RPA
- CAT-B Tree and RPA

REV	Date		
P11	15/03/2024	TS	DOH
GEA added			
P10	13/01/2024	TF	DOH
Amended to OMG comments			
P9	13/01/2024	TF	DOH
Entrance footpath amended to Consultee comments			
P8	03/01/2024	TF	DOH
Red line boundary updated to trace received Title			
P7	21/12/23	TF	DOH
Notes amended. Client name updated			
P6	21/12/23	TF	DOH
Notes and landscaping amended. Drawing title updated			
P5	12/12/23	TF	DOH
Estate road locally widened to improve tracking			
P4	17/11/23	TF	DOH
Updated to DTM comments			
P3	01/11/23	TF	DOH
Updated to Arboroculturalist Survey and RPAs			
P2	16/08/23	TF	DOH
Updated to Sixteen RE comments			
P1	13/07/23	TF	DOH
Initial issue			

REV	Date	Drawn by: -	Checked by: -

Status: S2 — Purpose of Issue: For Comment

drawing stage: **Stage 1**

client: **RA & CE Platt Ltd**

project: **Rackery Lane, Llay Industrial Park, Wrexham**

drawing title: **Proposed Illustrative Masterplan**

date 13/07/23 drawn TF

scale@A1 1:500 checked DOH

Rev **P11**

Job No **13361-AEW-SI-XX-DR-A-0005**

aew architects
0161 214 4370
www.aewarchitects.com

AEW Reference Number 13361



NOTES

AEWTP026C

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- All proprietary materials and products are to be used strictly in accordance with the manufacturers recommendations.

CDM 2015

Client notified of duties:

Principal Designer: **tbc**

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- 3.23ha / 7.98 acres (as Title CYM589598)
- Existing dense vegetation and CAT-C trees retained where possible
- Potential new opportunity planting
- Pond retained / potential attenuation
- Existing pond to be relocated subject to confirmation by Ecologist
- CAT-A Tree and RPA
- CAT-B Tree and RPA

- Red line boundary traced from NRG pdf drawing ref: 1329/TP/01:01-01 (drawing underlay)
- Landscape and assumed ecological corridors shown subject to input from an Ecologist. CAT A and B trees shown as Tree Solutions drawing ref; 23/AAI/WXM/314/01
- HGV circulation subject to tracking analysis
- Layout subject to levels design following topographical survey

REV	Date		
P3	04/04/24	TF	DOH
Red line boundary amended to align with Title			
P2	15/03/24	TS	DOH
GEA added			
P1	20/11/23	TF	DOH
Initial issue			

Drawn by: - Checked by: -

Status: S2 — Purpose of Issue: For Comment

drawing stage: **Stage 1**

client: **Oak Moss Group**

project: **Rackery Lane**
Llay Industrial Park
Wrexham

drawing title: **Proposed Site Plan**
Option 5
Largest Single Unit

date 20/11/23 drawn TF

scale@A1 1:500 checked DOH

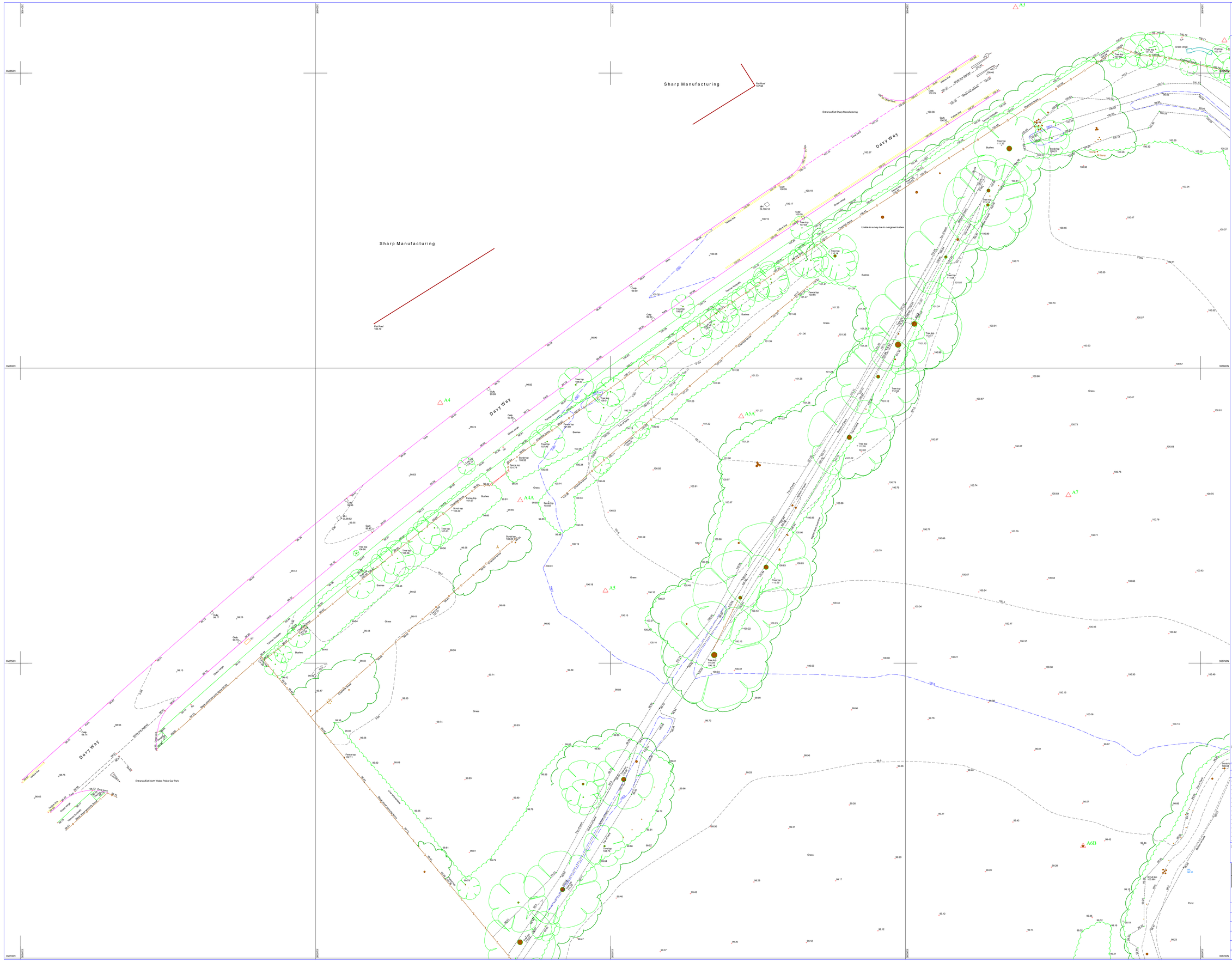
Rev **P3**

Job No **13361-AEW-SI-XX-DR-A-0007**

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AEW Reference Number 13361

Appendix B – Topographical Survey



Services carried out by Cheshire Surveys Ltd

Topographical Surveys - Measured Building Surveys - 3D Laser Scanning - Check Surveys
Monitoring Surveys - Deformation Surveys - Volumetric Surveys - Levelling - Setting Out

Disclaimer:
All efforts have been made to survey all utility services within the boundary of the survey We can not guarantee that we have been able to locate everything and further investigation will be required to establish full extents of services

Legend

- Armco
- Barrier
- Bottom Of Bank
- Bollard
- Borehole
- Building
- Canopy
- Centreline
- Chainlink Fence
- Channel Line
- Closeboard Fence
- Concrete Edge
- Concrete Post & Panel Fence
- Concrete Slab
- Drop Kerb
- Driveway
- Escarpment
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- Hedge
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- Kerb Line
- Palisade Fence
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- Tree Line
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Abbreviations

BT	BT Manhole	IC	Inspection Cover
CATV	Cable TV	INV	Invert Level
CCTV	Close Circuit TV	LP	Lamp Post
DPC	Damp Proof Course	MH	Man Hole
EARTH	Earth Point	OH	Overhead Cable
EP	Electricity Pole	OSBM	Ordnance Survey
ER	Earth Rod	RS	Road Sign
ES	Escarpment	TP	Telegraph Pole
FFL	Finish Floor Level	W	Water Cover
G	Gulley	WL	Water Level

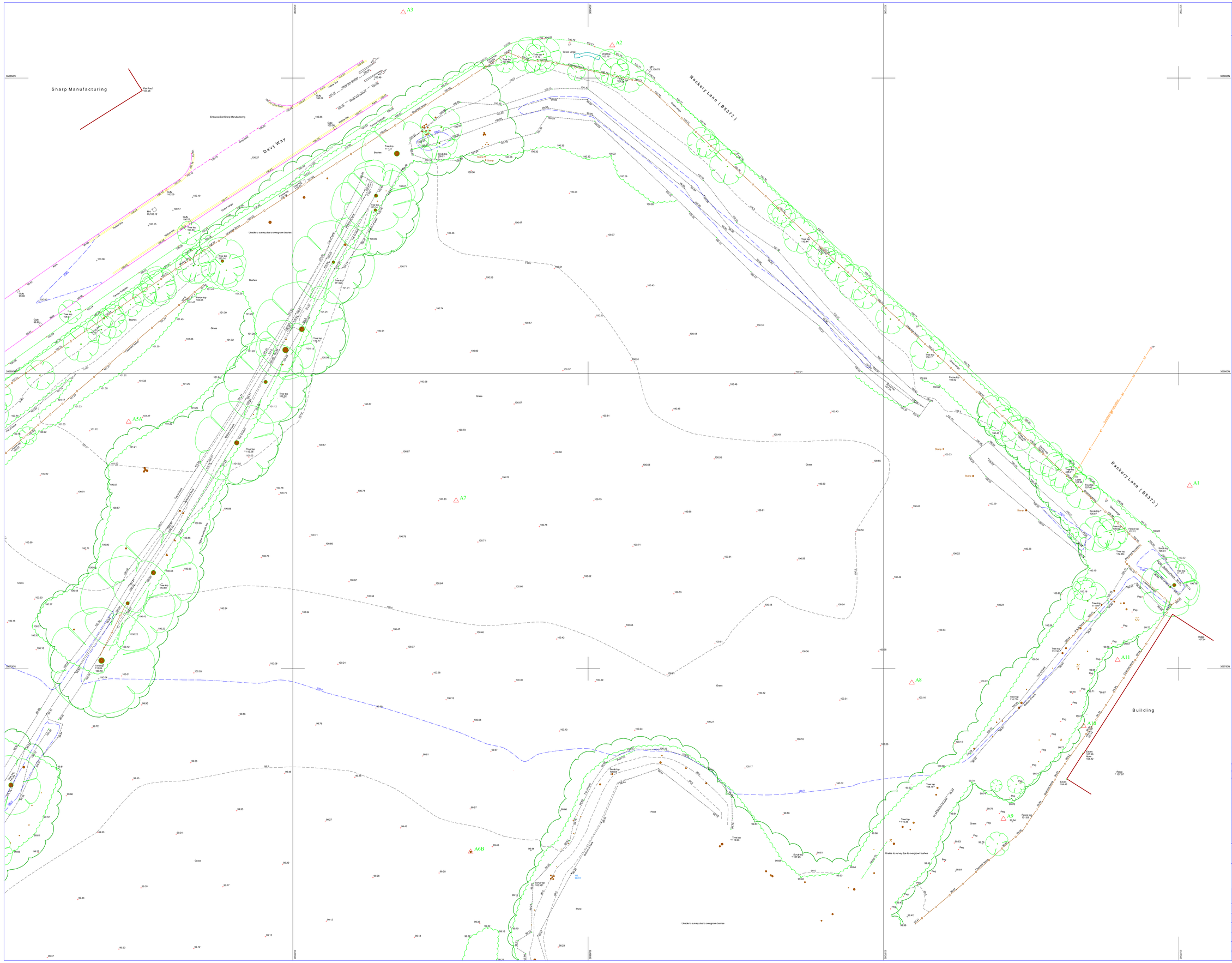
SURVEY STATIONS

Name	Easting	Northing	Height
A1	332751.867	356780.975	100.414
A10	332733.897	356740.269	99.892
A11	332739.655	356751.434	99.823
A2	332654.079	356855.490	100.741
A3	332618.674	356861.101	100.730
A4	332521.178	356794.089	99.874
A4A	332534.728	356777.557	99.800
A5	332549.168	356762.256	100.282
A5A	332572.193	356791.801	101.304
A6	332576.879	356695.109	99.072
A6A	332637.862	356676.261	98.820
A6B	332630.102	356718.993	99.746
A7	332627.630	356778.441	100.816
A8	332704.799	356747.618	100.385
A9	332720.326	356724.554	99.898

NOTES:
Horizontal and vertical control established using SmartNet GPS Network and OSGB36(15) coordinate System
This survey has been converted to a local grid orientated to OS grid. Position is only true at one point to OS coordinates

CHESHIRE SURVEYS LTD
Setting out and Survey Engineers
Unit 2, Barrowmore Enterprise Estate, Gt Barrow, Chester CH3 7JS
Email : gary@cheshiresurveys.co.uk Tel: 01829 741859 Mob: 077 8099 3661

Client	Oak Moss Group		
Location	Land Off Davy Way, Llay		
Description	Topographical Survey (Sheet 1 of 3)		
Drg. No.:	B0772/4579/1/*/1	Surveyed By:	GF
Scale: 1:	200/A0	Drawn By:	GF
Date:	28/09/2023	Amend:	*



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CCTV	Close Circuit TV	LP	Lamp Post
DPC	Damp Proof Course	MH	Man Hole
EARTH	Earth Point	OH	Overhead Cable
EP	Electricity Pole	OSBM	Ordnance Survey
ER	Earth Rod	RS	Road Sign
ES	Escarpment	TP	Telegraph Pole
FFL	Finish Floor Level	W	Water Cover
G	Gulley	WL	Water Level

Rev_A

Trees removed from survey that have been removed on site, as requested by client. 30/10/2024

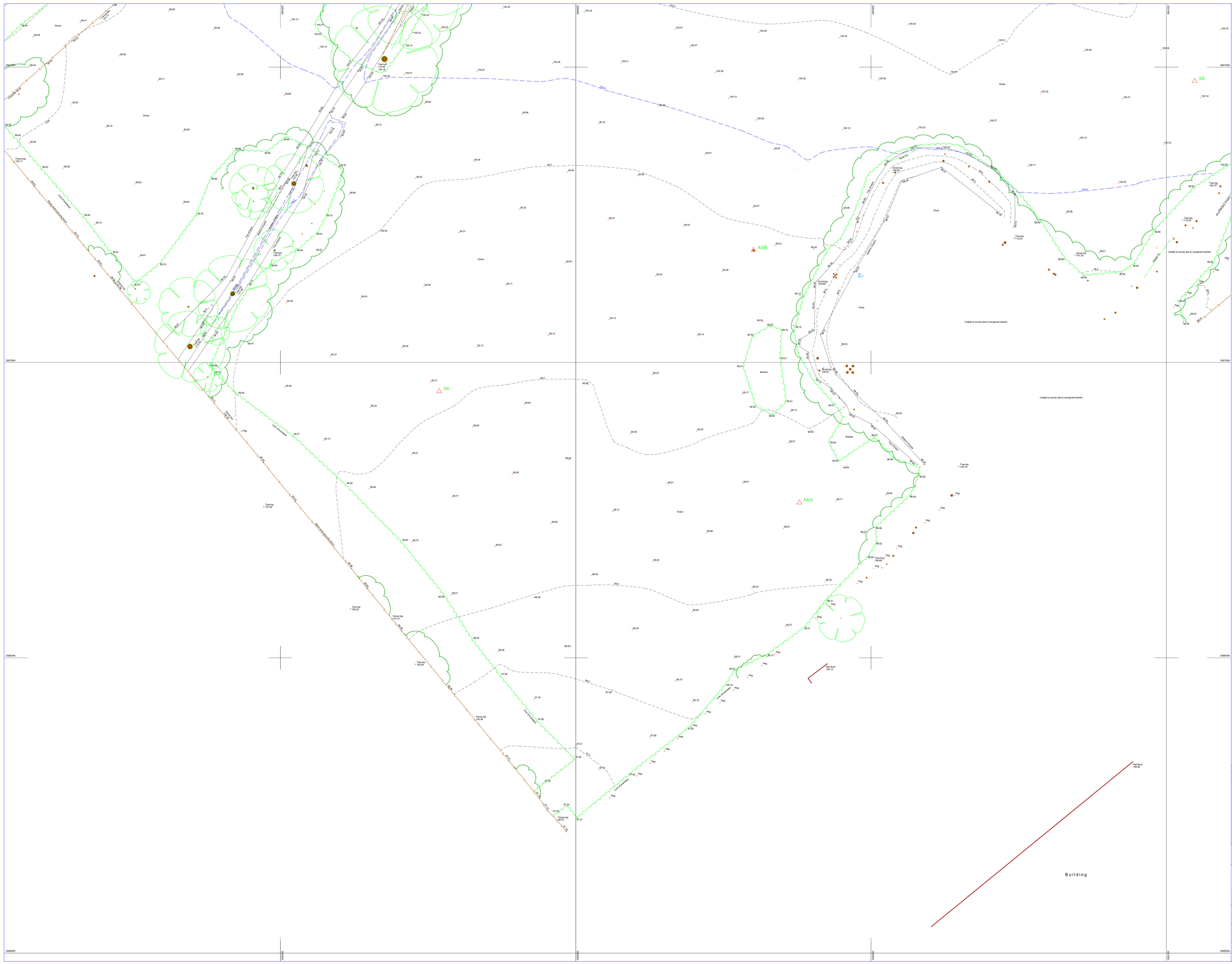
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Drg. No.:	B0772/4579/1/*/2	Surveyed By:	GF
Scale: 1:	200/A0	Drawn By:	GF
Date:	28/09/2023	Amend:	*



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Date:	28/09/2023	Amend:	*