



Llangatwg Community School Flood Consequences Assessment

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This report describes work commissioned by Morgan Sindall Construction and Infrastructure Ltd, by an instruction dated 1st May 2025. The Client's representative for the contract was Mark Miller of Morgan Sindall Construction and Infrastructure Ltd. Hannah Booth and Lucy Nicholson of JBA Consulting carried out this work.

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1 Introduction

1.1 Terms of Reference

JBA Consulting were commissioned by Morgan Sindall Construction & Infrastructure Ltd to undertake a Flood Consequences Assessment (FCA) to support a planning application for a proposed development at Llangatwg Community School, Aberdulais, Neath. This FCA demonstrates the suitability of the proposed development and describes the flood mitigation measures recommended to manage flood risk at the site.

1.2 FCA Requirements

This FCA follows the Welsh Government guidance on development and flood risk set out in the Technical Advice Note (TAN) 15: Development, Flooding and Coastal Erosion (31 March 2025). TAN-15 states that:

'The prime objective of a Flood Consequences Assessment is to develop a full appreciation of:

- The risks and consequences of flooding on the development; and
- The risk and consequences (i.e. the overall impacts) of the development on flood risk elsewhere.'

To achieve this, the FCA should establish if suitable avoidance and mitigation measures can be incorporated, in a manner compatible with the placemaking aims of Planning Policy Wales, within the site design to ensure that development is safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property; and
- Minimal disruption to the sustainable management of natural resources.

2 Site Description

2.1 Site Summary

The proposed development site is located at Llangatwg Community Comprehensive School in Aberdulais, Neath. The site is an established school which serves the Aberdulais and surrounding Neath Port Talbot Council authority area.

The site is comprised of the school buildings in the south-west of the site and playing fields in the north-east. Parking is available in the southern area of the site. Pedestrian and vehicular access to the site is available from two access roads, which connect the site to the A4230 Main Road and Penscynor.

The site is located in a predominantly residential area of Aberdulais and is bound to the north-west by woodland, to the north, east and south-west by residential development, and to the south by the A4230 Main Road and residential development.

Further information on the site is provided in Table 2-1.

Table 2-1 Site Summary

Parameter	Description
Site Name	Llangatwg School
Site area	4.97ha
Existing land use	School
Purpose of development	Sports pitches and school building
OS NGR	SS 76729 99315
Local Planning Authorities	Neath Port Talbot Council
Lead Local Flood Authority	Neath Port Talbot Council



Figure 2-1 Site Location

2.2 Site Topography

A topographic survey was undertaken by Gwalia Surveys in October 2024 and is provided in Appendix A. The NRW LiDAR data provides an alternative illustration of the site topography and is provided in Figure 2-2.

The site is shown to generally fall from north to south with an average ground level of 31.5mAOD. Ground levels are highest in the northern corner of the site at 40.18mAOD and fall towards the playing fields. Across the playing fields, ground levels gradually fall from 35mAOD to 31mAOD.

Within the existing school buildings area of the site, ground levels gradually fall in a southerly direction from 33mAOD to 30mAOD. The lowest ground levels on the site are situated in the southern corner, within the access road from the A4230 Main Road.

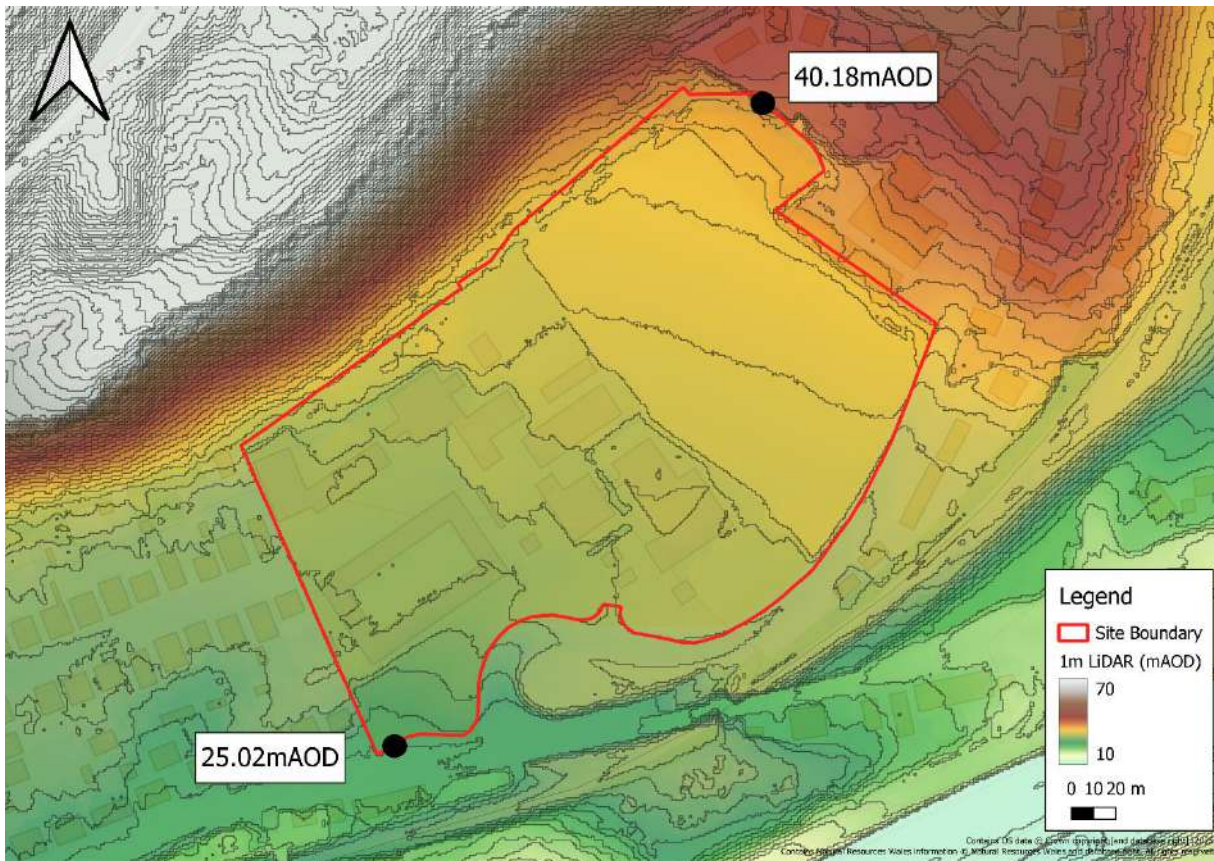


Figure 2-2 NRW 1m LiDAR

2.3 Soils and Geology

The geology of the site has been assessed using the BGS Geoindex¹. The bedrock geology is shown to be Brithdir Member comprised of sandstone. Superficial deposits are Glaciofluvial sheet deposits comprised of sand and gravel.

The soils on the site have been assessed using the Cranfield University Soilsclapes Viewer² and is comprised of freely draining acid loamy soils over rock.

2.4 Watercourses

Figure 2-3 shows the locations of the nearest NRW Main Rivers and ordinary watercourses in the vicinity of the site.

Two NRW designated Main Rivers are located in the local area. These are the River Neath, located 410m south of the site and the River Dulais, located 310m east of the site.

The Tennant Canal is located 160m south of the site.

Two unnamed ordinary watercourses are present within the site. The first unnamed ordinary watercourse (further described as unnamed ordinary watercourse 1) flows through the proposed development site, as shown in Figure 2-3. There is a secondary unnamed

¹ <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

² <https://www.landis.org.uk/soilsclapes/>

tributary joining the unnamed ordinary watercourse 1 from the north-east (further described as unnamed ordinary watercourse 2). The watercourse flow path has been provided in Figure 2-3.

To understand the watercourse characteristics on the proposed development site, a CCTV survey of the culverts within the site boundary and an analysis of historical mapping has been carried out by Drintech and Curtins, respectively. The results of the CCTV survey are presented on Drintech's Culvert Plan drawing ref 18846-01-001 in Appendix B and have been digitised for reference in Figure 2-4. Furthermore, several site walkovers have been undertaken, and information from these site visits has been used to understand the ordinary watercourses on or near to the site.

The unnamed ordinary watercourse 1, shown in Figure 2-4, is fed from an approximately 750mm diameter culvert (further described as Outlet A) along a headwall to the north of the proposed development boundary and an additional outlet on the headwall along the watercourse, believed to be road drainage from the road to the north of the site. The watercourse flows in a short stretch of open channel in the north-eastern part of the site before entering a 825mm diameter culvert (entrance situated at Inlet 2) under the school playing fields. The watercourse emerges at outlet 2 and flows in an open square concrete channel through the existing school site. The watercourse then flows into additional culverts at inlets 3 and 4 before flowing in a south westerly direction. Leaving the site the watercourse is culverted, flowing under the A4230 and on towards the River Neath.

Trash / security screens are present on culvert entrances and exits within the school site, which are currently maintained by the school.

It was noted during the site visits that the unnamed ordinary watercourse 1, both upstream and running through the site had a strong and steady flow, even during a prolonged period of dry weather. Furthermore, anecdotally, it was reported that the stream reacts little to storm events. These observations suggest that the watercourse may be fed by a groundwater source (further discussed in section 2.5).

The unnamed ordinary watercourse 2, shown in Figure 2-4, flows into a culvert at Inlet 1 before its confluence with the unnamed ordinary watercourse at outlet 1. It is understood that this watercourse was a ditch created by Neath Port Talbot Council to reduce waterlogging of the sports field. Site visits have indicated that this watercourse is fed by an approximately 200mm pipe (indicated in Figure 2-3) and due to the hydrogeology of the area, may be fed by lateral inflows from groundwater (further discussed in Section 2.5 below).

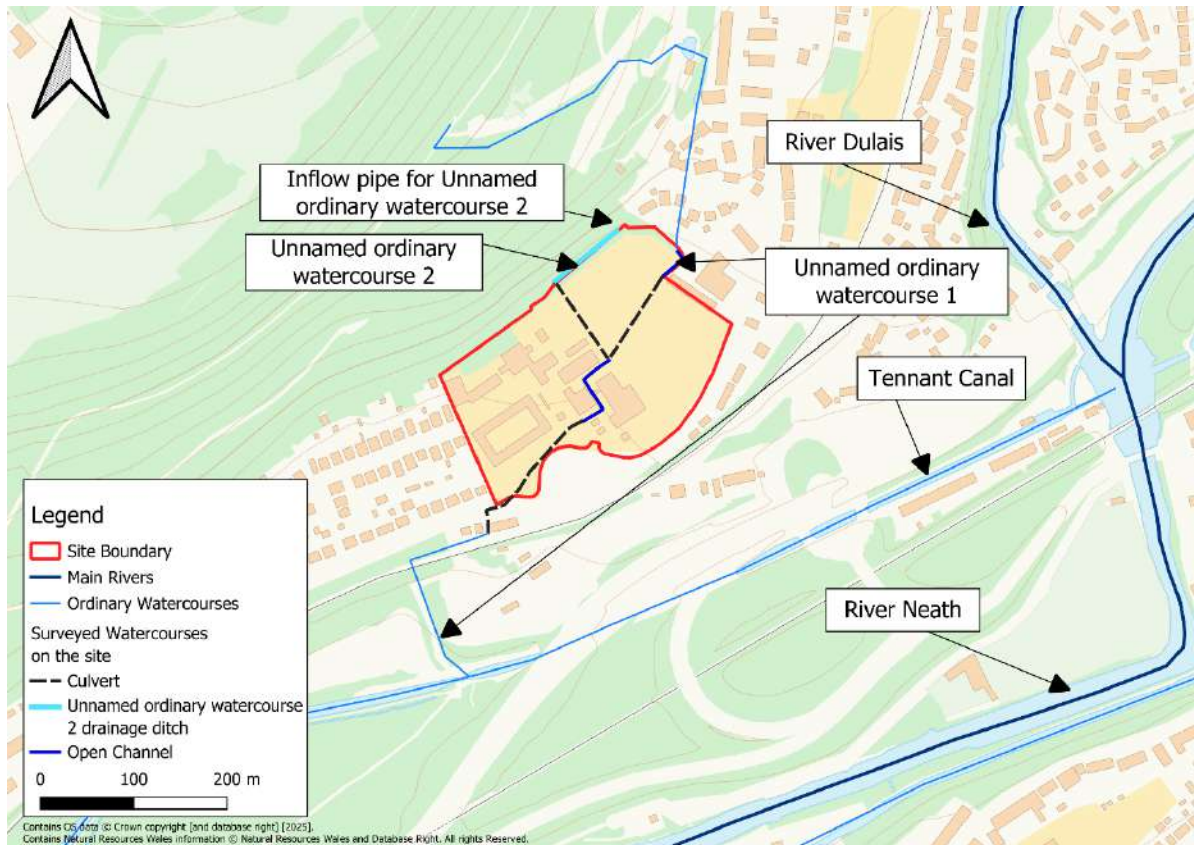


Figure 2-3 Watercourses and flood defences

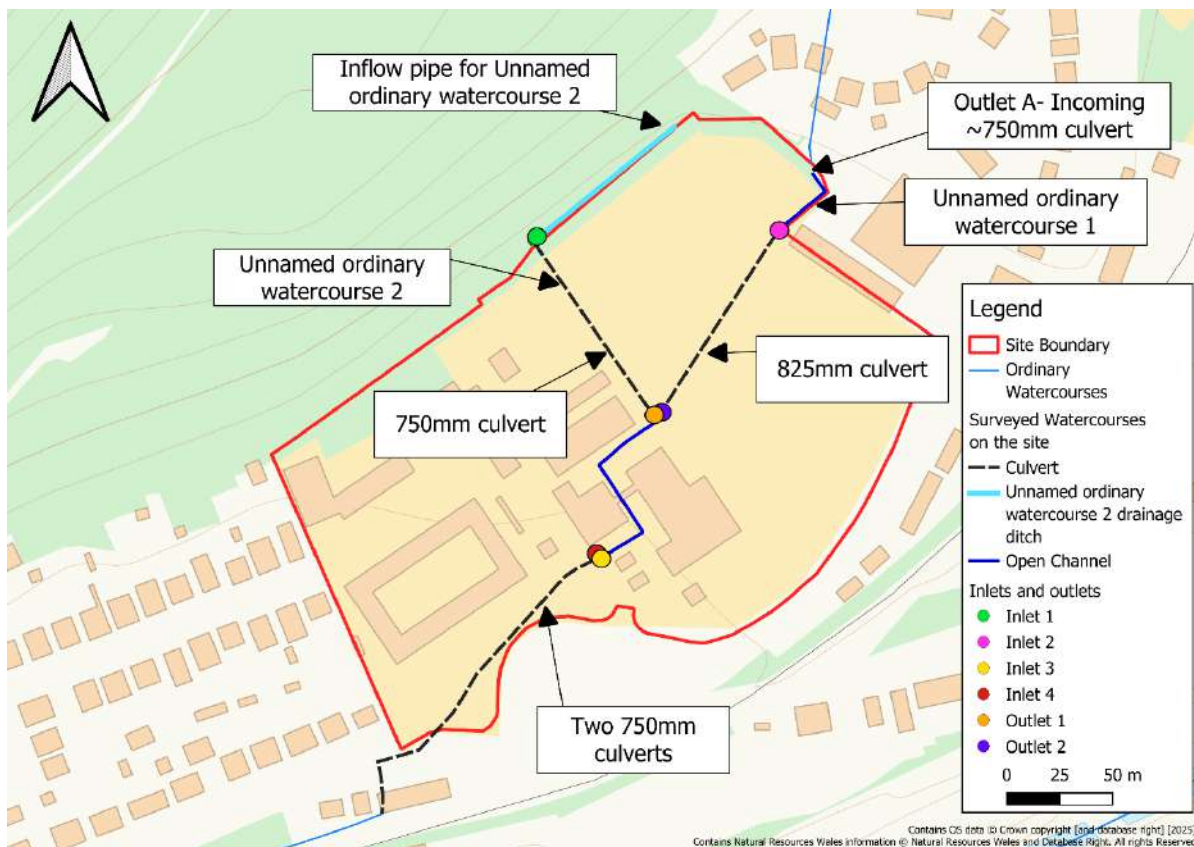


Figure 2-4 Watercourses at the site

2.5 Hydrogeology

Aquifers are defined as layers of permeable rock or unconsolidated material (sand, gravel, silt etc.) capable of storing and transporting large quantities of water. Understanding the behaviour and location of aquifers is important, as they can provide an indication of the potential for groundwater flooding and the behaviour of groundwater-fed watercourses.

The Brithdir Member bedrock geology and Glaciofluvial Sheet superficial deposits are classified as Secondary A aquifers. Secondary A aquifers comprise permeable layers that can support local water supplies and may form an important source of base flow to rivers.

To the north of the site, the bedrock varies in composition, with the hillside predominantly comprised of sandstone, capable of storing groundwater, before being crossed by a layer of sandstone and mudstone. The change in geology results in the underlying groundwater being unable to flow through the bedrock composition, and the groundwater emerging from springs across the hillside. The area has also been historically mined, which may allow space for water which drains into the ground to flow underneath.

Topography plays a crucial role in where and how groundwater emerges with low-lying areas and those with permeable geology being particularly susceptible. As shown in Figure 2-5, the proposed development site is situated lower than the hillside to the north and therefore it is possible that groundwater from this area could emerge at or near to the site.

The sources of both unnamed ordinary watercourses 1 and 2 are situated within the hill to the north and are likely fed by springs. The watercourses are reported to be relatively unreactive to rainfall, indicating that a large proportion of rainfall is likely infiltrating into the ground and the watercourses are fed predominantly by groundwater.

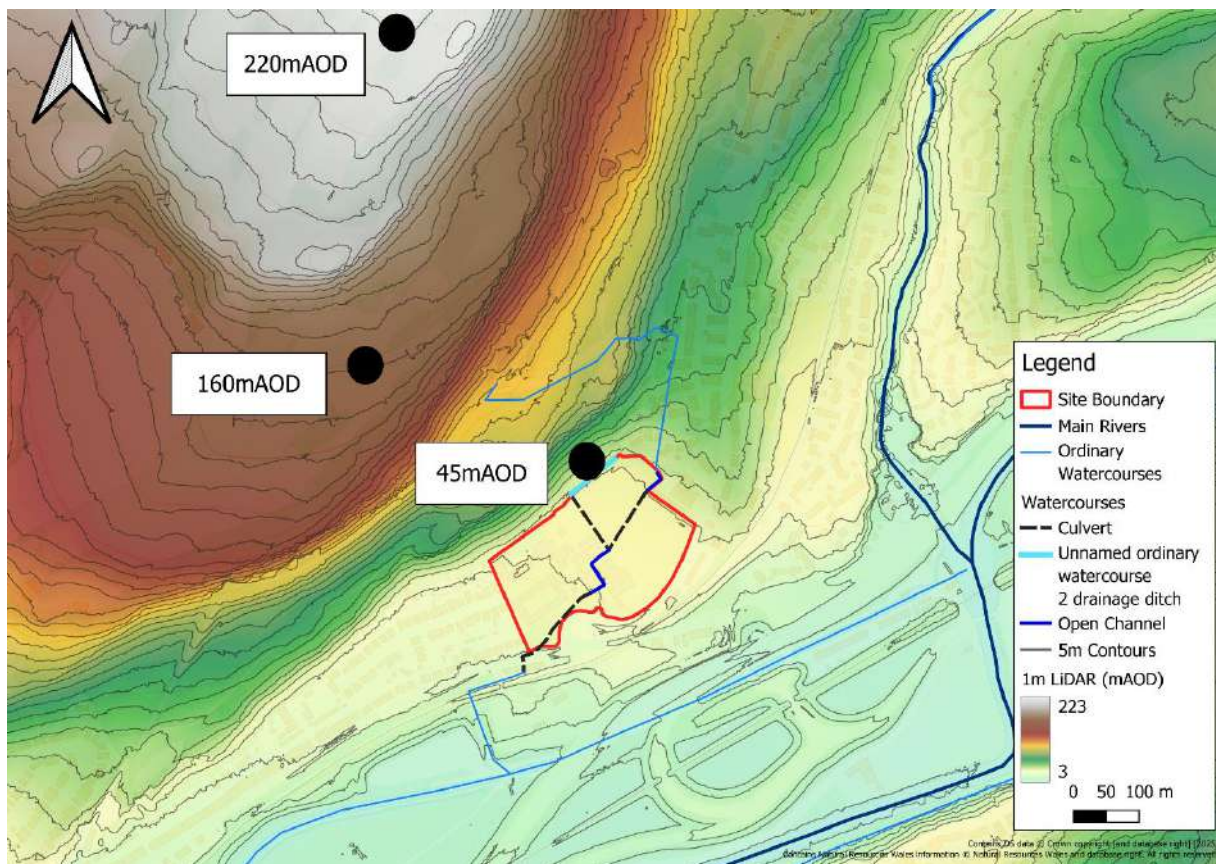


Figure 2-5 NRW 1m LiDAR- surrounding the site

2.6 Development Proposal

Development proposals are for the demolition of the existing school buildings and the reconfiguration of the site to provide enhanced sports and school facilities.

The development proposals will include:

- Three mixed sports pitches
- A running track
- Sensory Garden
- Amphitheatre / performance area
- Car parking
- Main school building
- Service yard
- Forest School
- Re-naturalisation of the channel of unnamed ordinary watercourse 1
- Associated landscaping and paving of external spaces.

Plans showing the development proposals are provided in Figure 2-6 and Appendix C.



Figure 2-6 Proposed Development Plans

3 Planning Policy and Flood Risk

3.1 Planning Context

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which, together with PPW, provide the national planning policy framework for Wales. These policies promote sustainable development in Wales, improving its social, economic, environmental, and cultural wellbeing in accordance with the Wellbeing of Future Generations Act 2015.

Technical Advice Note 15 (TAN-15), originally introduced by the Welsh Government in 2004 and most recently updated in March 2025, provides technical guidance relating to development planning and flood risk in Wales. TAN-15 provides a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed. The approach set out in the recent update to TAN-15 ensures flooding and coastal erosion are accorded appropriate consideration in plan making and development management decisions.

3.2 Form of Development

TAN-15 recognises two key forms of development: New development and Redevelopment. The definition of both terms is provided in Table 3-1.

Table 3-1 Form of Development

Form of Development	Definition
New Development	Any Development on greenfield land
Redevelopment	Any Development on previously developed land as defined in Planning Policy Wales

As detailed in Section 2.5, development proposals are for the redevelopment of the Llangatwg School site. As such, the proposed development is classified as **Redevelopment**.

3.3 Vulnerability Classification

TAN-15 assigns one of three flood risk vulnerability classifications to developments, as shown in Table 3-2. The proposed development is for educational use and is consequently classified as **Highly Vulnerable Development**.

Table 3-2 TAN-15 Vulnerability Classification

Development category	
Highly vulnerable development	All residential premises (including hotels, Gypsy and Traveller sites, caravan parks and camping sites). Schools and childcare establishments, colleges and universities. Hospitals and GP surgeries. Especially vulnerable industrial development (e.g. power generating and distribution elements of power stations, transformers, chemical plants, incinerators), and waste disposal sites. Emergency services, including ambulance stations, fire stations, police stations, command centres, and emergency depots. Buildings used to provide emergency shelter in time of flood.
Less vulnerable development	General industrial, employment, commercial and retail development. Transport and utilities infrastructure. Car parks. Mineral extraction sites and associated processing facilities (excluding waste disposal sites). Public buildings including libraries, community centres and leisure centres (excluding those identified as in Highly Vulnerable category and emergency shelters). Places of worship. Cemeteries. Equipped play areas. Renewable energy generation facilities (excluding hydro generation).
Water Compatible Development	Boatyards, marinas and essential works required at mooring basins. Development associated with canals. Flood defences and management infrastructure. Open spaces (excluding equipped play areas). Hydro renewable energy generation.

3.4 Flood Map for Planning

The Flood Map for Planning (FMfP) is the starting point for consideration of flood risk. The map uses flood zones to indicate the degree to which land is at risk of flooding from rivers, the sea, surface water and small watercourses. The main zones are Zone 1, Zone 2, Zone 3 and the Defended Zone. The FMfP displays predicted future flood risk with an allowance made for climate change over a 100-year lifetime of development.

3.4.1 Flood Map for Planning - Rivers

The entire site is located within Flood Zone 1 of the Flood Map for Planning for Rivers. This area is shown as transparent in the Flood Map for Planning, as shown in Figure 3-1. Flood Zone 1 represents areas that have less than a 0.1% AEP chance of flooding in any given year, including climate change.

This source of flooding risk is assessed in detail in Section 4 of the FCA.



Figure 3-1 Flood Map for Planning- Rivers

3.4.2 Flood Map for Planning - Sea

The entire site is located within Flood Zone 1 of the Flood Map for Planning for the Sea. This area is shown as transparent in the Flood Map for Planning and has not been represented graphically. Flood Zone 1 represents areas that have less than a 0.1% AEP chance of flooding in a given year, including climate change.

This source of flooding risk is assessed in detail in Section 4 of the FCA.

3.4.3 Flood Map for Planning - Surface Water and Small Watercourses

The site is predominantly within Flood Zone 1 of the Flood Map for Planning for Surface Water and Small Watercourses, as shown in Figure 3-2. Parts of the site are situated in Flood Zones 2 and 3 of the Flood Map for Planning for Surface Water and Small Watercourses. These areas include along the areas of open channel of the unnamed watercourse 1 in the north of the site and along the area of open channel within the existing school site. Areas of ponding are also present around the existing buildings, and a flow path is present from the open section of unnamed ordinary watercourse 1 through the site.

This source of flooding risk is assessed in detail in Section 5 of the FCA.

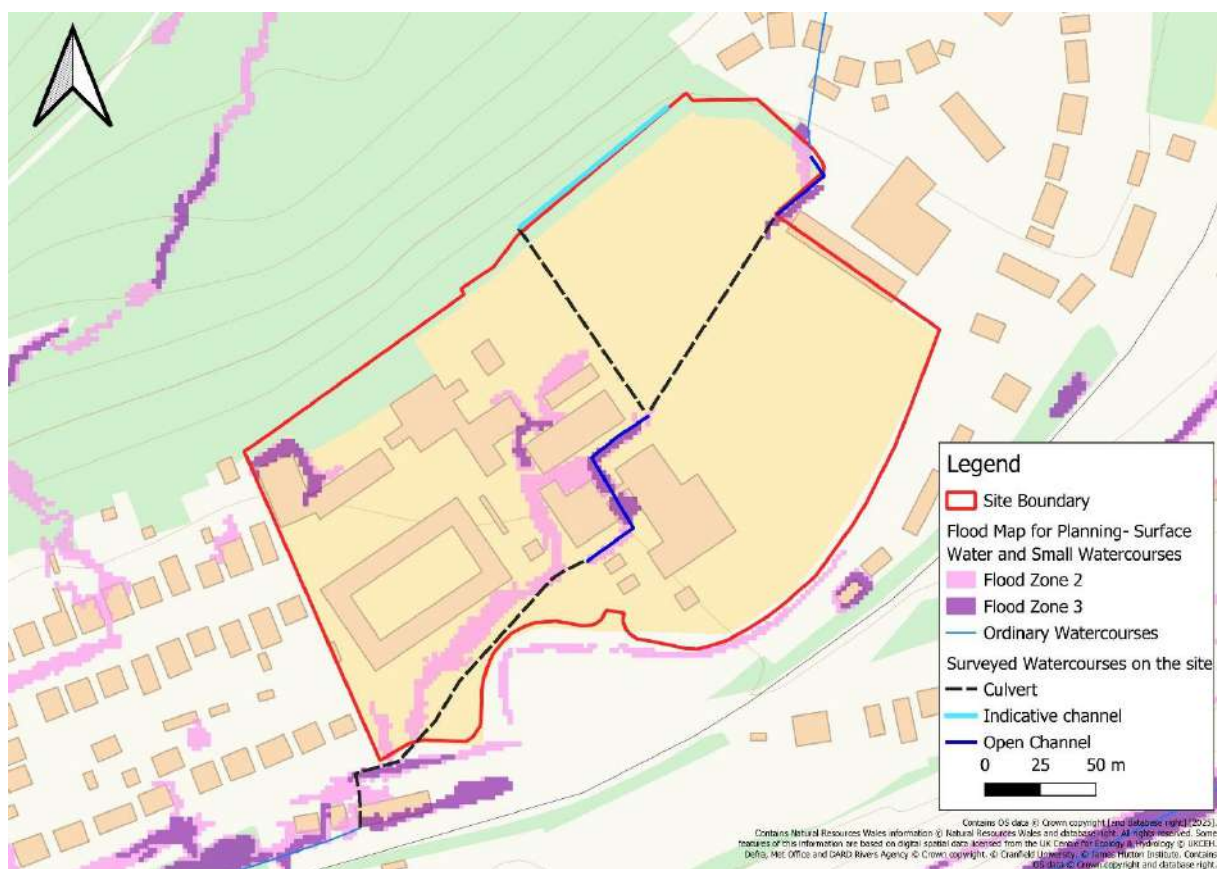


Figure 3-2 Flood Map for Planning- Surface Water and Small Watercourses

4 Flood Risk Assessment

4.1 Review of Existing Flood Risk Data

This section assesses the risk to the proposed development from all sources of flooding, the risk of increased flooding to others, and how flood risks can be managed. Table 4-1 below provides a summary of the flood risk to the site from all sources of risk.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✗	Very Low - Located in an area of very low risk of flooding.
Flood Risk from the Sea	✗	Very Low - Located in an area of very low risk of flooding from the Sea.
Flood Risk from Surface Water and Small Watercourses	✓	Refer to Chapter 5 for detailed assessment
Flood Risk from Groundwater	✗	Medium - It has been concluded that groundwater flood risk in Neath is medium
Flood Risk from Reservoirs, canals and other artificial sources	✗	Very Low - The risk of reservoir failure, canal flooding or flooding from other artificial sources is very low
Flood Risk from Sewers	✗	Low - Limited information available, with the current location of sewers unknown.

4.2 Historical Flooding

NRW's map of recorded flood extents does not show any evidence of historic flooding on the site.

Neath Port Talbot Flood Risk Management Plan³ recorded flood incidents occurring within close proximity to this site. It was unclear whether any flooding had occurred at the site within the Flood Risk Management Strategy⁴ due to the scale of mapping presented.

During the site visit undertaken on the 12th November 2024, it was reported by school staff that the site has flooded in the past due to a blockage at Inlet 2. The source of blockage and the extent of previous flood events are unknown.

4.3 Flood Risk from Rivers

As discussed in 3.4.1, the Flood Map for Planning for Rivers mapping shows that the proposed development site is at **very low risk** of flooding from these sources (i.e. Flood

³ <https://media.npt.gov.uk/media/xubbj4xn/floodriskmanagementplan15-1.pdf?v=20250117154447>

⁴ https://media.npt.gov.uk/media/m0llscgr/lfrms_npt_local_flood_risk_management_strategy-1.pdf?v=20250117154447

Zone 1). This means that there is a less than 1 in 1000 (<0.1% AEP) chance of flooding in any given year, including an allowance with climate change. Consequently, the risk of flooding is concluded to be **very low**.

4.4 Flood Risk from the Sea

As discussed in 3.4.2, the Flood Map for Planning for the Sea mapping shows that the proposed development site is at **very low risk** of flooding from this source (i.e. Flood Zone 1). This means that there is a less than 1 in 1000 (<0.1% AEP) chance of flooding in any given year, including an allowance with climate change. Consequently, the risk of flooding is concluded to be **very low**.

4.5 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and can result in damage to property. The risk of groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

Neath Port Talbot Flood Risk Management Plan³ identified no records of historic groundwater flooding at the site.

As discussed in Section 2.5, the site is underlain by a Secondary A Aquifer. It has been noted that OS mapping of the site shows a number of 'issues' near to the site indicating a spring. These are likely to be groundwater fed springs and indicate that groundwater levels around the site could be high. Any flow occurring from these springs would be intercepted by the unnamed ordinary watercourse 2 and channelled into unnamed ordinary watercourse 1.

It can therefore be concluded that the risk of groundwater flooding at the site is **medium**.

Ground investigations and infiltration testing to inform the site drainage strategy should take groundwater levels into consideration.

4.6 Flood Risk from Reservoirs, Canals and other artificial sources

The NRW FRAW Flood Risk from Reservoirs map illustrates that the proposed redevelopment site is at **very low risk** of reservoir flooding.

The Tennant Canal is located 160m south and downslope of the site. Any flood flows from the Canal would be directed away from the site by the natural topography.

The site is therefore considered to be at **very low risk** of flooding from reservoirs, canals and other artificial sources.

4.7 Flood Risk from Sewers

The Neath Port Talbot Flood Risk Management Plan⁵ and Flood Risk Management Strategy⁶ suggests there is no evidence of historic sewer flooding at the site. The FRMP concluded that flooding from sewers does not have significant consequences at a strategic scale. Therefore, it is concluded that there is a **low risk** of flooding from sewers at the site

⁵ <https://media.npt.gov.uk/media/xubbj4xn/floodriskmanagementplan15-1.pdf?v=20250117154447>

⁶ https://media.npt.gov.uk/media/m0llscgr/lfrms_npt_local_flood_risk_management_strategy-1.pdf?v=20250117154447

5 Detailed assessment of flood risk from Surface Water and Small Watercourses

As identified in Section 3, the most significant source of flood risk to the redevelopment site is from surface water and small watercourse flooding. The following section reviews available flood risk information on this source of flooding, considers the capacity of the existing culverts and screen, the potential implications of the development proposals and recommended risk management measures.

5.1 Review of National Flood Hazard Mapping

To better understand the risk of flooding posed to the site and the potential implications of climate change, the NRW National Flood Hazard Mapping (NFHM) has been used to provide a further assessment of flooding. This dataset contains predicted flood extents, depths and velocities for both the present day and climate change scenarios and has been used to identify the predicted flood extents and depths for both the 1% AEP plus climate change (medium risk), and 0.1% AEP plus climate change (low risk) flood events at the proposed redevelopment site. The FMfP surface water and small watercourse flood risk mapping is derived from this product.

NFHM is based on generalised flood modelling undertaken by JBA Consulting on behalf of NRW in 2018. The modelling approach is based on direct-rainfall modelling, a LiDAR Digital Terrain Model and limited and simplified modelling of key drainage culverts. In the case of Llangatwg School it is understood that the key culverts described in Section 2.4 have been included in the generalised model.

5.1.1 1% AEP plus climate change event

During the 1% AEP plus climate change event, the proposed redevelopment site is predicted to be largely flood free, with flood water confined to the channel of unnamed ordinary watercourse 1. Small areas of ponding are present around the site on the edge of buildings, with shallow depths of up to 0.37m shown in Figure 5-1.

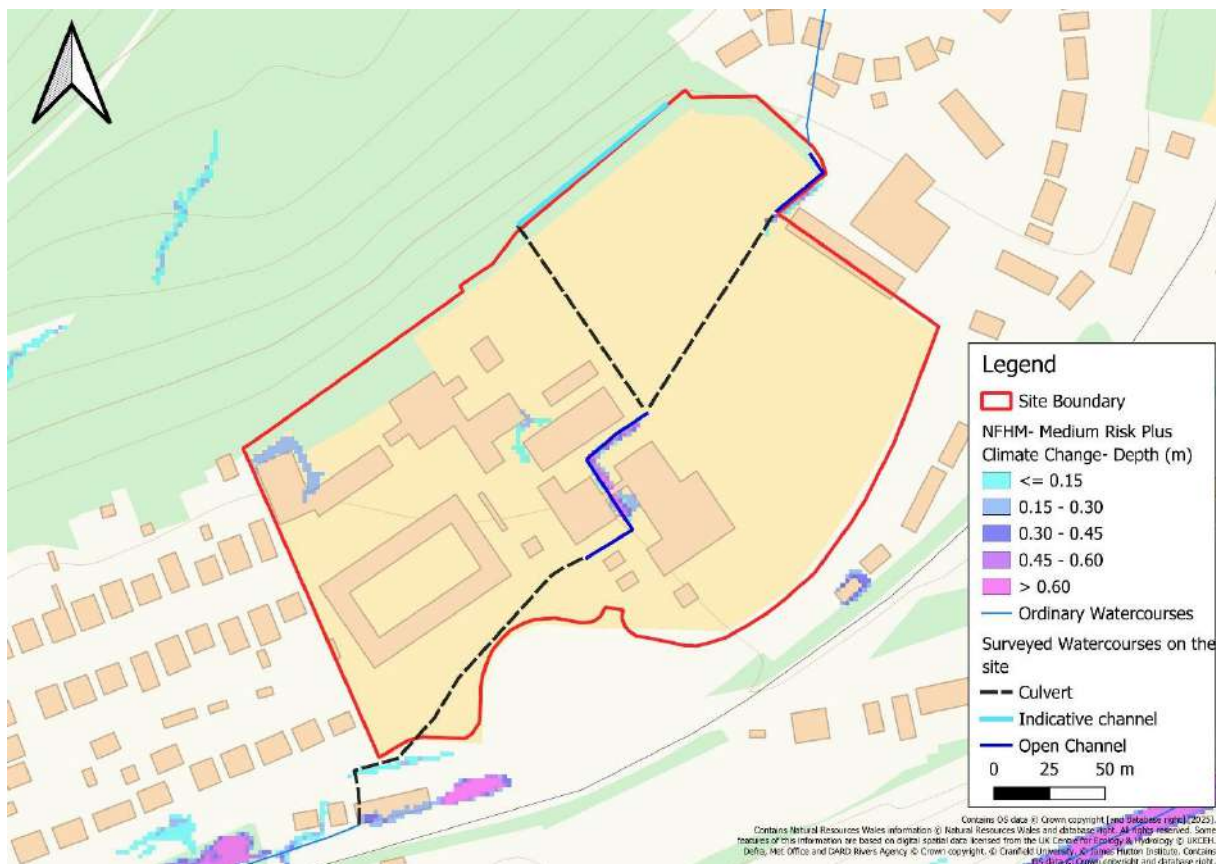


Figure 5-1 Flood Risk from Rivers- Medium Risk (incl. climate change) - Flood depths

5.1.2 0.1% AEP plus climate change event

As in the 1% AEP plus climate change event, the proposed redevelopment site is predominantly predicted to be flood free, with the majority of flood water confined to small areas of ponding around existing buildings and water within the channel of unnamed ordinary watercourse 1 shown in Figure 5-2.

Flood water is shown to emerge from the channel of unnamed watercourse 1 in the centre of the site and flow in a south westerly direction out of the site.

Given the nature and limited extents and depths of surface water flooding predicted in the NFHM design events, the risk of such flooding outside of the culverted watercourses is regarded to be low. The risks of surface water flooding are well within the capabilities of a SAB approved surface water drainage system to manage.

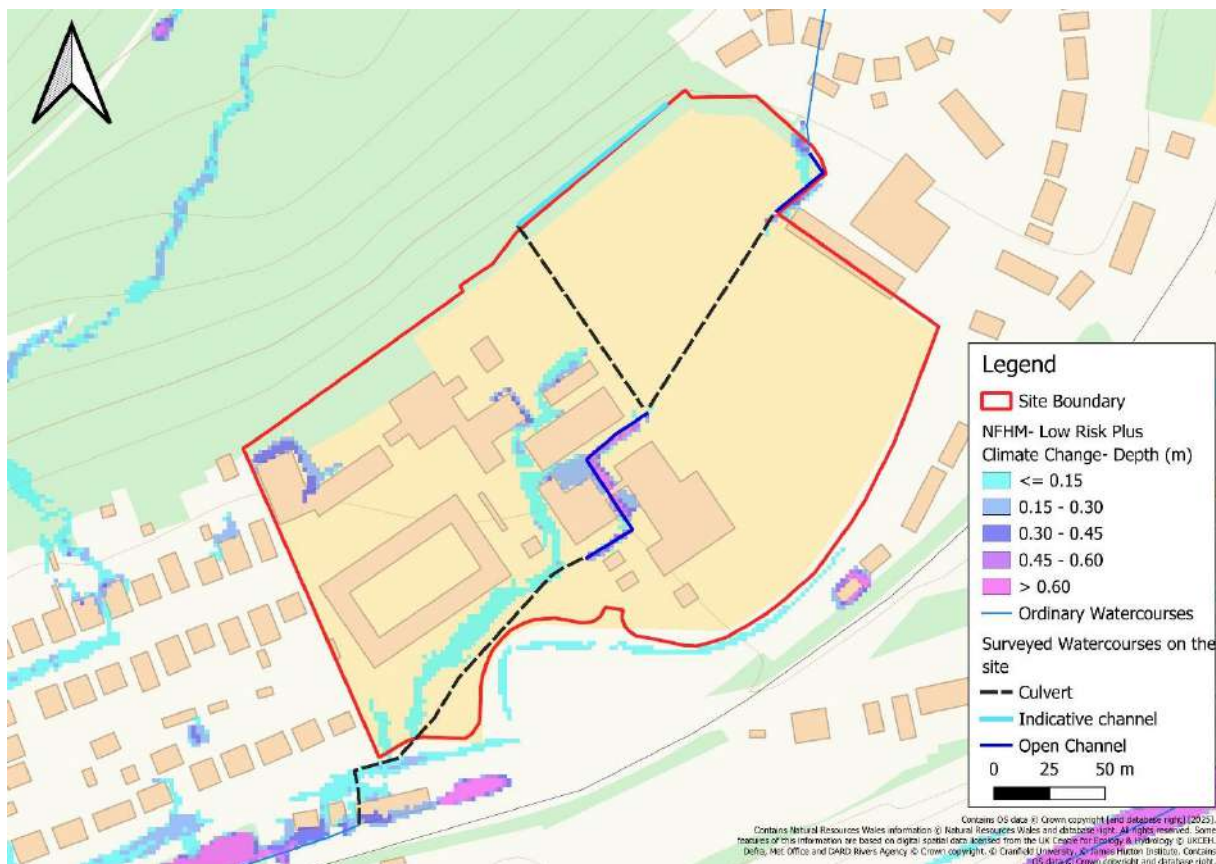


Figure 5-2 Flood Risk from Rivers- Low Risk (incl climate change) - Flood depths

5.2 Culvert capacity assessment

The generalised NFHM modelling includes a simplified representation of the culverted watercourses at the site. The results of this modelling suggest that the watercourses will be contained within their culverts and open channel reaches. However, as a generalised flood model and noting the hydrogeology concerns raised previously in Section 2.5, these findings should be used with some caution. Consequently, a high level review of the existing culvert features has been undertaken to 'ground truth' the NFHM results. Although, it should be noted that detailed hydraulic modelling of the watercourse network has not been performed; in part due to the difficulty in estimating flood flows.

Flows into the site are limited by the approximately 750mm diameter (0.442m^2) unnamed ordinary watercourse 1 culvert flowing into the site (Outlet A) on the northern boundary, as shown in Figure 2-4. Should upstream flows exceed the capacity of this culvert they are likely flood out of bank at the inlet to the culvert, near Parc Penscynnor. From this point floodwater would follow the prevailing west to east gradient, and would not track towards the school site.

Approximately 40m downstream of Outlet A, the watercourse enters a 825mm diameter (0.535m^2) culvert. The only intervening input between these two culverts is a small highway outfall. Therefore, the downstream culvert has a cross-sectional area 20% greater than the culvert immediately upstream of it. This makes it unlikely that the culvert, which runs closest to the proposed school buildings (the 825mm), will exceed its capacity.

Downstream of Outlets 1 and 2, and again after a short stretch of intervening open channel, the watercourse enters an twin barrel culvert through inlets 3 and 4. The twin 750mm culvert have a combined cross sectional area of 0.884m², which is slightly smaller than the combined cross sectional area of the upstream outlines. However, should flooding occur at this location floodwater will follow away from the proposed school building and in a manner unchanged from the present site conditions.

In conclusion, the capacity of the culverts through the site will be unchanged from the present site conditions. There is no evidence that these culverts have experienced hydraulic capacity issues in the past, and the key culvert that runs closest to the proposed new school building is notably larger than the culvert immediately upstream from which any flooding would need to emerge. Therefore, there are reasonable grounds to conclude that the culvert capacities at the site are adequate to manage to risk of small watercourse flooding.

Notwithstanding the conclusion above, there remains a residual risk associated with culvert blockage, with inlet 2 being most sensitive. The risk of blockage at this inlet is increased by the presence of a security screen. Should a blockage occur at this location it is likely that exceedance flows will be directed towards the proposed school building. It is therefore important that all reasonable precautions are taken to avoid a blockage at this location.

5.3 Recommendations for flood risk mitigation

It is recommended that the following mitigation measures are implemented to reduce the residual risk of flooding occurring from culvert blockage:

- The open section of channel immediately upstream of Inlet 2 should be cleared and secured so far as possible to prevent unauthorised access and the accumulation of debris.
- Consideration should be given to the requirement and possible removal of the security screen at Inlet 2 and its corresponding outlet. The risk of unauthorised access to be managed by other means.
- A management and maintenance plan should be in place to ensure the watercourses and screens are regularly checked and cleared to reduce the risk of blockage.
- So far as practical the new schools building should be raised above surrounding ground levels to direct any exceedance flow around the building.

6 Acceptability of Flood Consequences

Whether a development should proceed or not will depend upon whether the consequences of flooding can be safely managed, including its effects on flood risk elsewhere. TAN-15 sets out the key conditions that should be met to demonstrate that development is appropriate for its location.

6.1 Acceptability Criteria

The site has been assessed against the Acceptability Criteria of Section 11 of TAN-15, as shown in Table 6-1 below.

Table 6-1 Assessment of Acceptability Criteria

TAN-15 Acceptability Criteria	Comments	Achieved
No increase in flooding elsewhere.	The development proposals will not increase the risk of flooding elsewhere. The risk of surface water flooding will be managed through the use of SuDS features, which should deliver an improvement on the current site drainage arrangements.	Yes
Occupiers aware of flood risk	The site owners will be made aware of the risk in the form of this report and a management and maintenance plan for the culverts.	Yes
Escape/evacuation routes present	Evacuation routes are present within the site.	Yes
Flood emergency plans and procedures agreed and in place	Mitigation measures will be implemented to reduce the risk of flooding from the ordinary watercourses on the site. It is recommended that a flood emergency plan for the unlikely event of culvert blockage is prepared.	Yes
Flood resistant and resilient design	Refer to recommendations contained in Section 5.3	Yes
Acceptable consequences for type of use	The risk and consequences of flooding can be appropriately managed on the site.	Yes

7 Conclusions

JBA Consulting were commissioned by Morgan Sindall Construction & Infrastructure Ltd to undertake a Flood Consequences Assessment (FCA) to support a planning application for a proposed development at Llangatwg Community School, Aberdulais, Neath.

Development proposals are for the demolition of the existing school buildings and the reconfiguration of the site to provide enhanced sports and school facilities.

The proposals are classified as highly vulnerable development under TAN-15.

The Flood Map for Planning shows the site to be located within Flood Zone 1 of the Flood Map for Planning for Rivers and Sea and Flood Zones 2 and 3 of the Flood Map for Planning for Surface Water and Small Watercourses. An FCA is required due to partial coverage of Flood Zone 2 and 3 of the Flood Map for Planning for Surface Water and Small Watercourses.

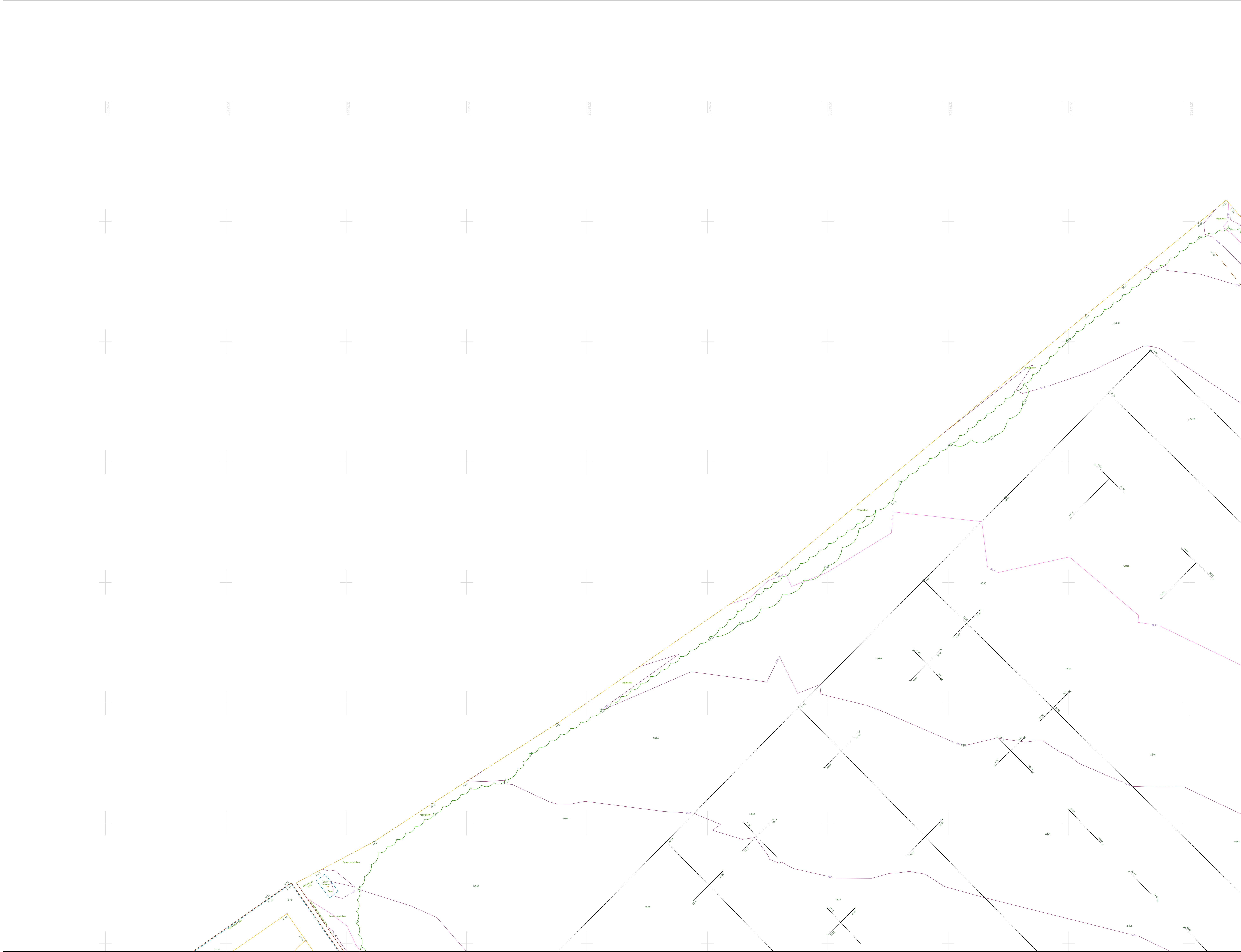
The site is at medium risk of groundwater flooding and low risk of sewer flooding. The site is at very low risk of river, reservoir, canal, other artificial sources and tidal flooding.

The Flood Map for Planning suggests that part of the site is at risk of small watercourse flooding. An assessment of the flood risk mechanisms on the site has indicated that the area upstream of the unnamed ordinary watercourse 1 poses the most significant risk of flooding to the site due to the risk of blockage of the culvert.

The risk of flooding can be mitigated through the reduction of debris within the open section of the channel immediately upstream of Inlet 2 through clearance and secured access to the channel. A management and maintenance plan should be in place to ensure the watercourses and screens are regularly checked and cleared to reduce the risk of blockage. Consideration should also be given to the requirement and possible removal of the security screen at Inlet 2 and its corresponding outlet. It is further recommended, so far as practical, the new school buildings should be raised above surrounding ground levels to direct any exceedance flow around the building.

In conclusion, the FCA has found that in respect to flood risk, the proposed development meets the requirements set out in TAN-15 and the aims of Planning Policy Wales.

A Topographic Survey



Coordinate System

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Key to Abbreviations

Inspection Covers & Chambers	Walls & Fence Types
AV Air Valve	BL Block Wall
BH Borehole	BR Brick Wall
BT British Telecom Cover	BWF Barbed Wire Fence
CCP Cable Drive Pit	CB Close Boarded Fence
CV Combined Water	CI Corrugated Iron Fence
Dr Ch Drainage Channel	CL Chain Link Fence
Elec Electric Inspection Cover	CIP Concrete Post
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FI Fire Hydrant	HR Hand Rail
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RE Rodding Eye	
SC Stop Cock	
SV Stop Valve	
SW Storm Water	
TV Cable Television Cover	
UL Up-lifter	
UTL Unable to Lift	
WM Water Motor	
WIO Washout	

Ground Surface Types	Street Furniture
Asp Asphalt	B Bollard
B/P Brick Pavers	BB Bellisha Beacon
Conc Concrete	DP Down Pipe
Plav Concrete Paving	EP Electricity Pole
Tac Tactile Paving	FB Flower Bed
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Measurement Descriptions
CL Cover Level
d Depth (m)
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FFL Finished Floor Level
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IL Invert Level
SL Sump Level
SoLl Soffit Level
WL Water Level

Linetypes & Symbols

— Banks	→ Benking
— Buildings	→ Flow Direction
— Building Overhead	→ Gate
— Change of Surface	△ Survey Station
— Fences	○ Tree
— Kerbs	
— Overhead Cables	
— Ridges & Eaves	
— Steps	
— Walls	
— Vegetation	
— Tree Canopy	
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— Storm Water	

Sheet Layout

Rev.	Date	Drawn	Details

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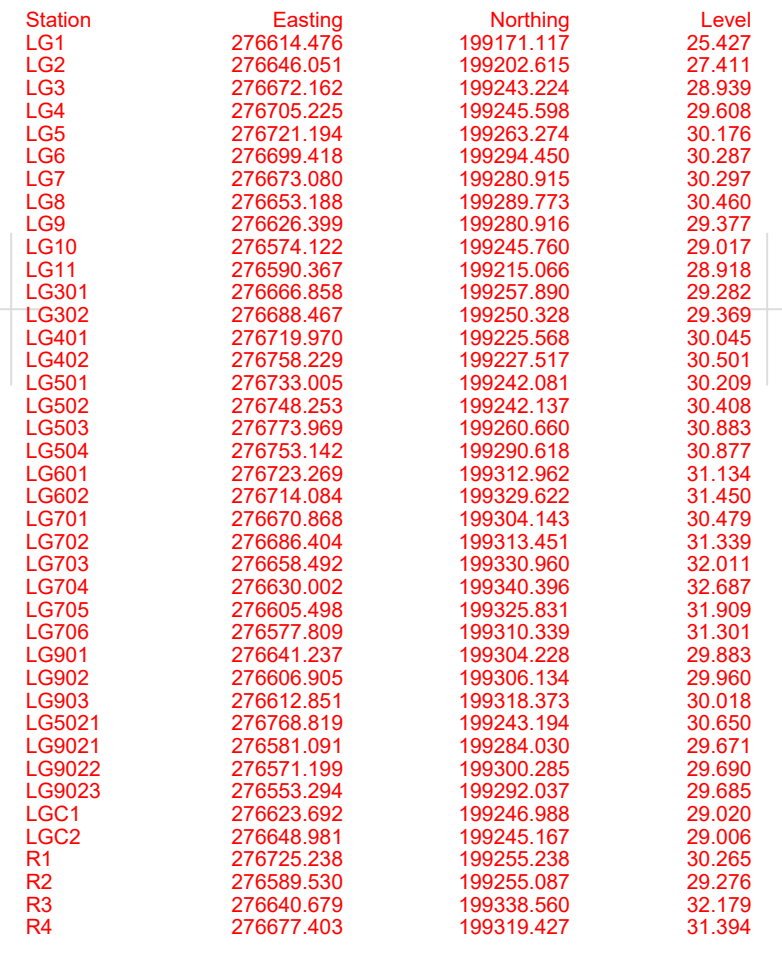
LAND | UTILITIES | BUILDING | BOUNDARY | BIM

Title: Topographical Survey

Project: Llangatwg Community School

Client: Morgan Sindall

Drawn: NJ/CU	Checked: DR
Date: 15.10.2024	Scale: 1:100 @ A0
Drawing Number: 3387-T-01	Rev.



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CW Cable Drip Fit	C/C Cold Boarded Fence
CDP Cast Duct Polymer	CC Corrugated Iron Fence
Dr Drainage Chamber	CL Chain Link Fence
Elec Electric Inspection Cover	C/P Concrete Post
ER Earth Rod	Gab Gabion Wall
FH Fly Head	H/R Hand Rail
FW Full Water	I/R Iron Railings
G Gully	Pal Palisade Fence
GC Gas Cock	P/R Post & Rail Fence
GV Gate Valve	P/S Post & Stile Fence
IC Inspection Cover	RET Retaining Wall
KO Kerb Outlet	SL Stone Wall
MH Manhole	
St Street Light	Street Furniture

Asp.	Asphalt	RS	Road Sign
B/C	Block Closures	RWP	Rain Water Pipe
CP	Concrete Paving	SP	Sign Post
Pav.	Concrete Paving	Stary	Stary Wire
Tac.	Tactile Paving	SVP	Soil Vent Pipe
		TCB	Telephone Call Box
		TL	Traffic Light
		TP	Telegraph Pole
		VP	Vent Pipe

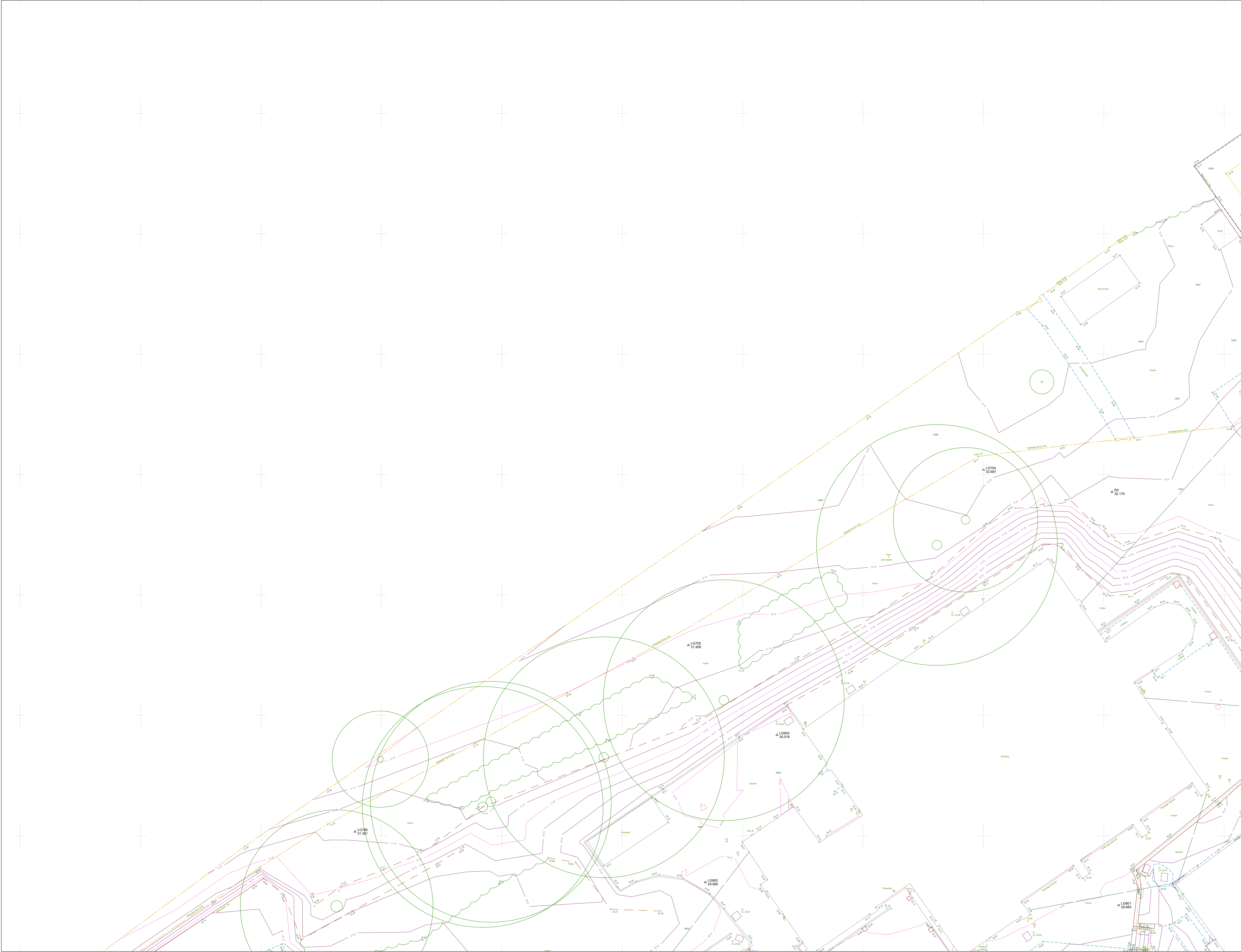
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dia.	Diameter (mm)
FFL	Finished Floor Level
h	Feature Height (m)
IL	Invert Level
SL	Sump Level
Soft.	Soft Level
WL	Water Level

	Banks		Banking
	Buildings		Flow Direction
	Building Overhead		Gate
	Change of Surface		Survey Station
	Fences		Tree
	Kerbs		
	Overhead Cables		
	Ridges & Eaves		
	Steps		
	Walls		
	Vegetation		
	Tree Canopy		
	Combined Water		
	Foul Water		
	Storm Water		

Rev.	Date	Drawn	Details
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Title: Topographical Survey			
Project: Llangatwg Community School			
Client: Morgan Sindall			
Drawn: NJ/CU		Checked: DR	
Date: 15.10.2024		Scale: 1:100 @ A0	
Drawing Number: 3387-T-02			Rev.
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Coordinate System

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Key to Abbreviations

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AV Air Valve	BE Block Wall
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BT British Telecom Cover	BWV Barbed Wire Fence
CCP Cable Drive Pit	CB Close Boarded Fence
CV Combined Water	CI Corrugated Iron Fence
Dr Ch. Drainage Channel	CL Chain Link Fence
Elec. Electric Inspection Cover	CIP Concrete Post
ER Earth Rod	Galb Galvanised Wall
FH Fire Hydrant	HR Hand Rail
FW Foul Water	IR Iron Railings
G Gully	Pal Palisade Fence
GC Gas Cock	PFR Post & Rail Fence
GV Gas Valve	PW Post & Wire Fence
IC Inspection Cover	Ret Retaining Wall
KD Kerb Outlet	St Stone Wall
MH Manhole	
RE Rodding Eye	
SC Stop Cock	
SV Storm Valve	
UL Up-lifter	
UTL Unable to Lift	
WM Water Motor	
WIO Washout	

Ground Surface Types	Street Furniture
Asp Asphalt	B Bollard
B/BP Brick Pavers	BB Bellisha Beacon
Conc. Concrete	DP Down Pipe
Plav. Cobble Paving	EP Electricity Pole
Tac. Tactile Paving	FB Flower Bed
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	LP Lamp Post
	MP Marker Post
	Post Post Box
	RS Road Sign
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—	Overhead Cables		
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—	Steps		
—	Walls		
—	Vegetation		
—	Tree Canopy		
—	Combined Water		
—	Foul Water		
—	Storm Water		

Sheet Layout

Rev.	Date	Drawn	Details

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Title: **Topographical Survey**

Project: **Liangatwg Community School**

Client: **Morgan Sindall**

Drawn: NJ/CU	Checked: DR
Date: 15.10.2024	Scale: 1:100 @ A0
Drawing Number: 3387-T-03	Rev.:



Coordinate System

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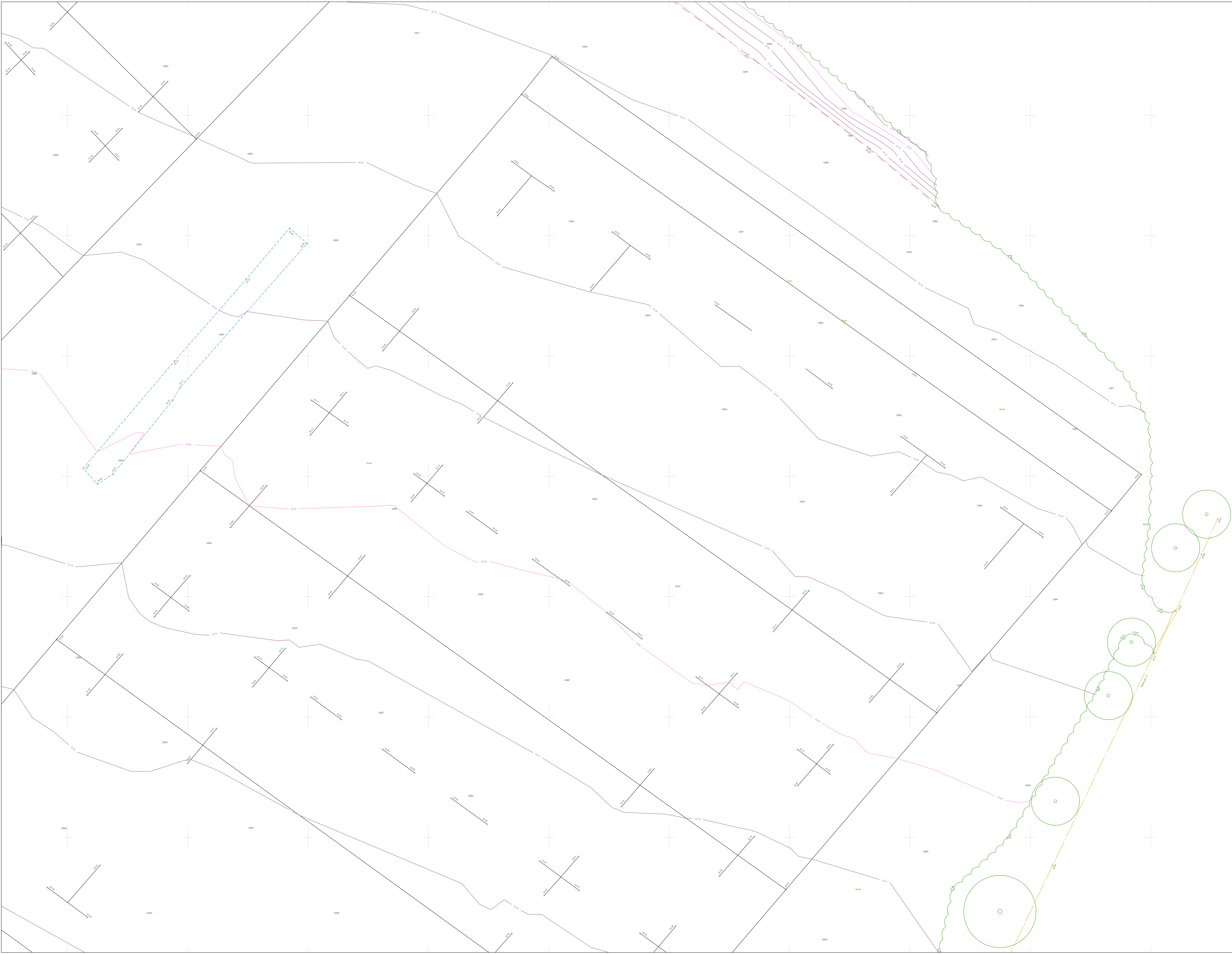
LAND | UTILITIES | BUILDING | BOUNDARY | BIM

Title: **Topographical Survey**

Project: **Liangatwg Community School**

Client: **Morgan Sindall**

Drawn: NJ/CJ	Checked: DR
Date: 15.10.2024	Scale: 1:100 @ A0
Drawing Number: 3387-T-04	Rev:



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Ground Surface Types

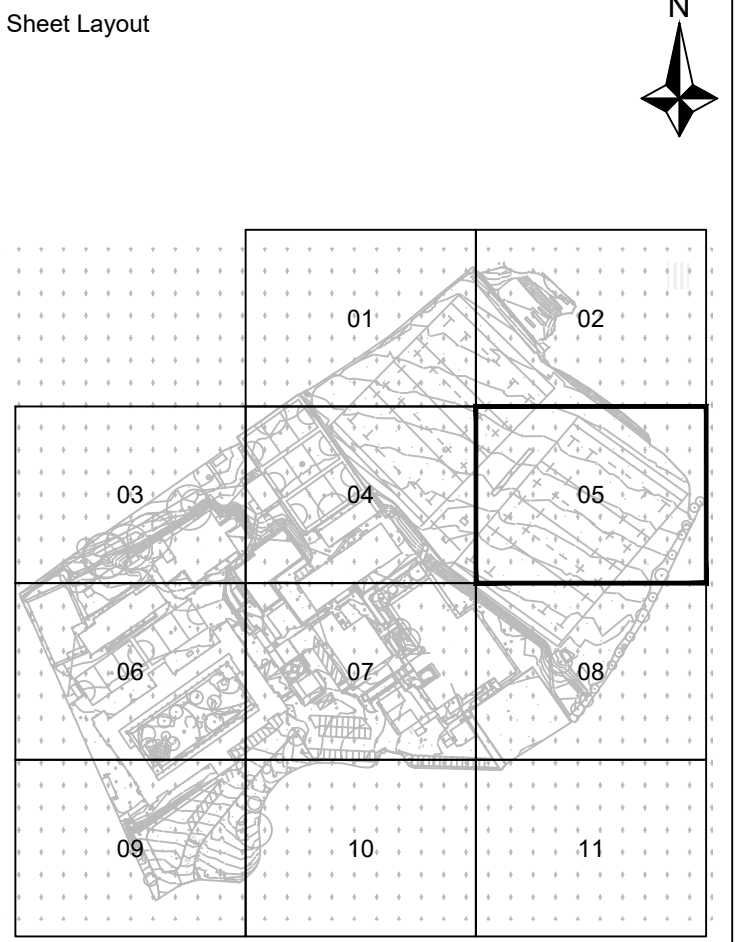
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Linetypes & Symbols

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Rev.	Date	Drawn	Details

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Title: Topographical Survey

Project: Llangatwg Community School

Client: Morgan Sindall

Drawn:	NJ/CU	Checked:	DR
Date:	15.10.2024	Scale:	1:100 @ A0
Drawing Number:	3387-T-05	Rev.	



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Sheet Layout

Rev.	Date	Drawn	Details

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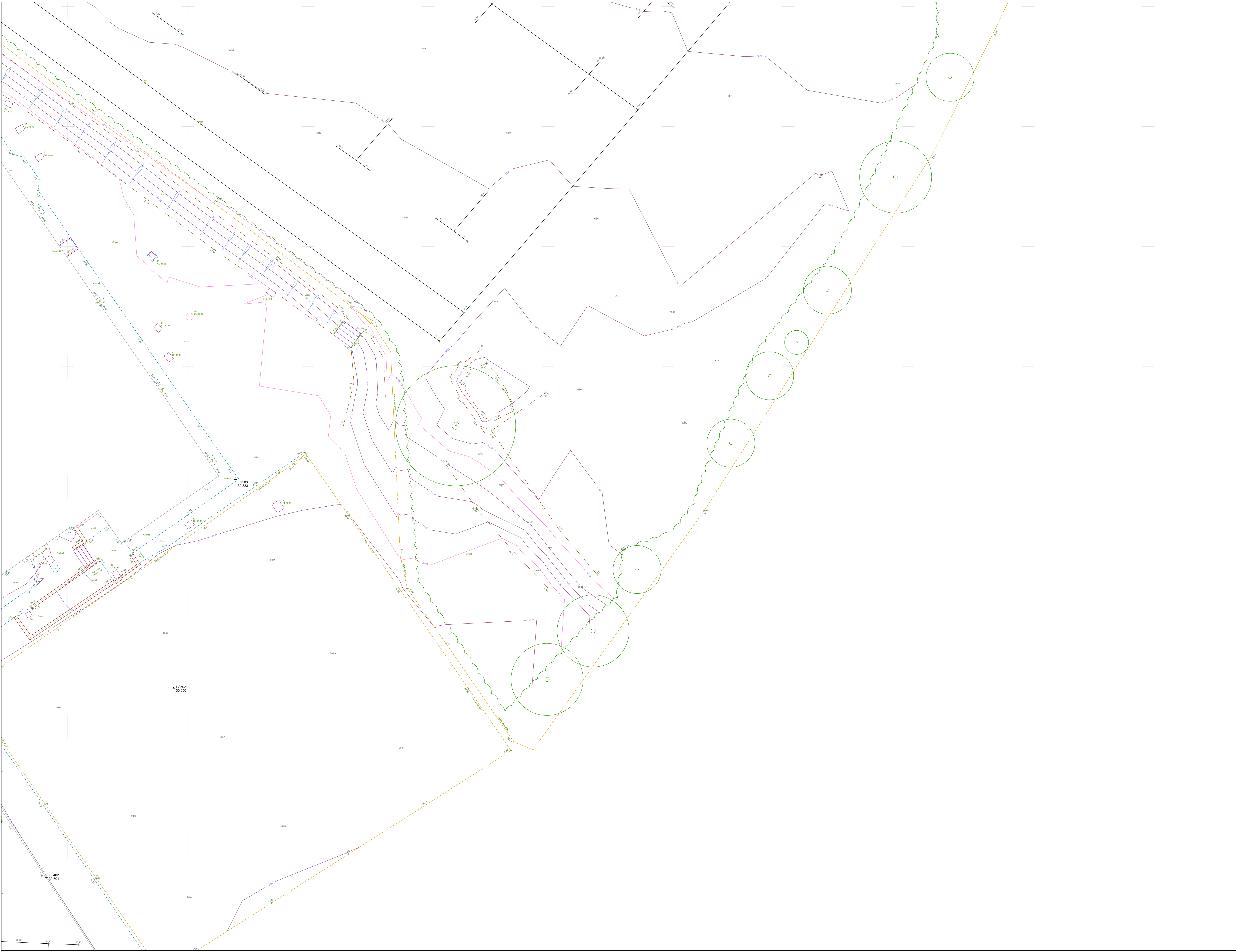
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Title: **Topographical Survey**

Project: **Liangatwg Community School**

Client: **Morgan Sindall**

Drawn: NJ/CU	Checked: DR
Date: 15.10.2024	Scale: 1:100 @ A0
Drawing Number: 3387-T-07	Rev:



Coordinate System

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—	Kerbs		
—	Overhead Cables		
—	Ridges & Eaves		
—	Steps		
—	Walls		
—	Vegetation		
—	Tree Canopy		
—	Combined Water		
—	Foul Water		
—	Storm Water		

Sheet Layout

Rev.	Date	Drawn	Details

Gwalia
SURVEYORS

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Cardiff: 029 2011 1700 London: 020 3011 1099
W: gwaliasurveyors.co.uk

LAND | UTILITIES | BUILDING | BOUNDARY | BIM

Title: **Topographical Survey**

Project: **Liangatwg Community School**

Client: **Morgan Sindall**

Drawn: NJ/CU	Checked: DR
Date: 15.10.2024	Scale: 1:100 @ A0
Drawing Number: 3387-T-08	Rev.



Coordinate System

This survey has been oriented to the Ordnance Survey (OS) National Grid and Datum using GPS observations and the OS Active Network.

A true OS coordinate was established near to the centre of the site. This survey has been contorted to this point. Further OS coordinates were established to create a true OS bearing for angle orientation.

No scale factor has been applied to this survey. The coordinates shown are arbitrary and not true OS coordinates which do have a scale factor applied.

Notes

1. Dimensions should not be scaled. All dimensions should be verified on site prior to construction.
2. All dimension and levels are in metres unless otherwise stated.
3. Some detail may have been obscured by parked vehicles, stored materials, overgrown vegetation, and leaf litter.
4. All data shall remain Copyright of Gwalia Surveyors unless formally agreed otherwise.
5. The surveyed boundary features may not be legal boundaries.
6. Gwalia Surveyors cannot accept any responsibility for any damage to computer systems from viruses which may be contained in the datafiles supplied.

Key to Abbreviations

Inspection Covers & Chambers	Walls & Fence Types
AV Air Valve	BE Block Wall
BH Borehole	BS Block Wall
BT British Telecom Cover	BWF Barbed Wire Fence
CDP Cable Drive Pit	CB Chain Link Fence
CV Combined Water	CI Corrugated Iron Fence
Dr Ch. Drainage Channel	CL Chain Link Fence
Elec. Electric Inspection Cover	CIP Concrete Post
ER Earth Rod	GR Gabion Wall
FI Fire Hydrant	HR Hand Rail
FW Foul Water	IR Iron Railings
G Gully	IR Iron Railings
GC Gas Cock	PA Palisade Fence
GV Gas Valve	P&W Post & Wire Fence
IC Inspection Cover	PW Post & Wire Fence
KD Kerb Outlet	RE Retaining Wall
MH Manhole	ST Stone Wall
RE Rodding Eye	
SC Stop Cock	
SV Stop Valve	
SW Storm Water	
TV Cable Television Cover	
UL Uplighter	
UTL Unable to Lift	
WM Water Motor	
WO Washout	

Ground Surface Types

Asp. Asphalt	BS Bollard
B/P Brick Pavers	BB Bellisha Beacon
Conc. Concrete	BP Down Pipe
Play. Coloured Paving	EP Electricity Pole
Tac. Tactile Paving	FB Flower Bed
	JB Junction Box
	LP Lamp Post
	MP Marker Post
	PS Post Box
	RS Road Sign
	RWP Rain Water Pipe
	SP Sign Post
	SVF Soil Vent Pipe
	TCS Telephone Call Box
	TL Traffic Light
	TP Telegraph Pole
	VP Vent Pipe

Measurement Descriptions

CL Cover Level
d Depth (m)
dia Diameter (mm)
FFL Finished Floor Level
h Feature Height (m)
IL Invert Level
SL Sump Level
Soft. Soffit Level
WL Water Level

Linetypes & Symbols

— Banks	→ Benking
— Buildings	→ Flow Direction
— Building Overhead	→ Gate
— Change of Surface	→ Survey Station
— Fences	→ Tree
— Kerbs	
— Overhead Cables	
— Ridges & Eaves	
— Steps	
— Walls	
— Vegetation	
— Tree Canopy	
— Combined Water	
— Foul Water	
— Storm Water	

Sheet Layout

Rev.	Date	Drawn	Details

Gwalia
SURVEYORS

Unit 1, Link Trade Park,
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Contact: 029 2011 1700 | Email: 020 3011 1099
W: gwaliasurveyors.co.uk

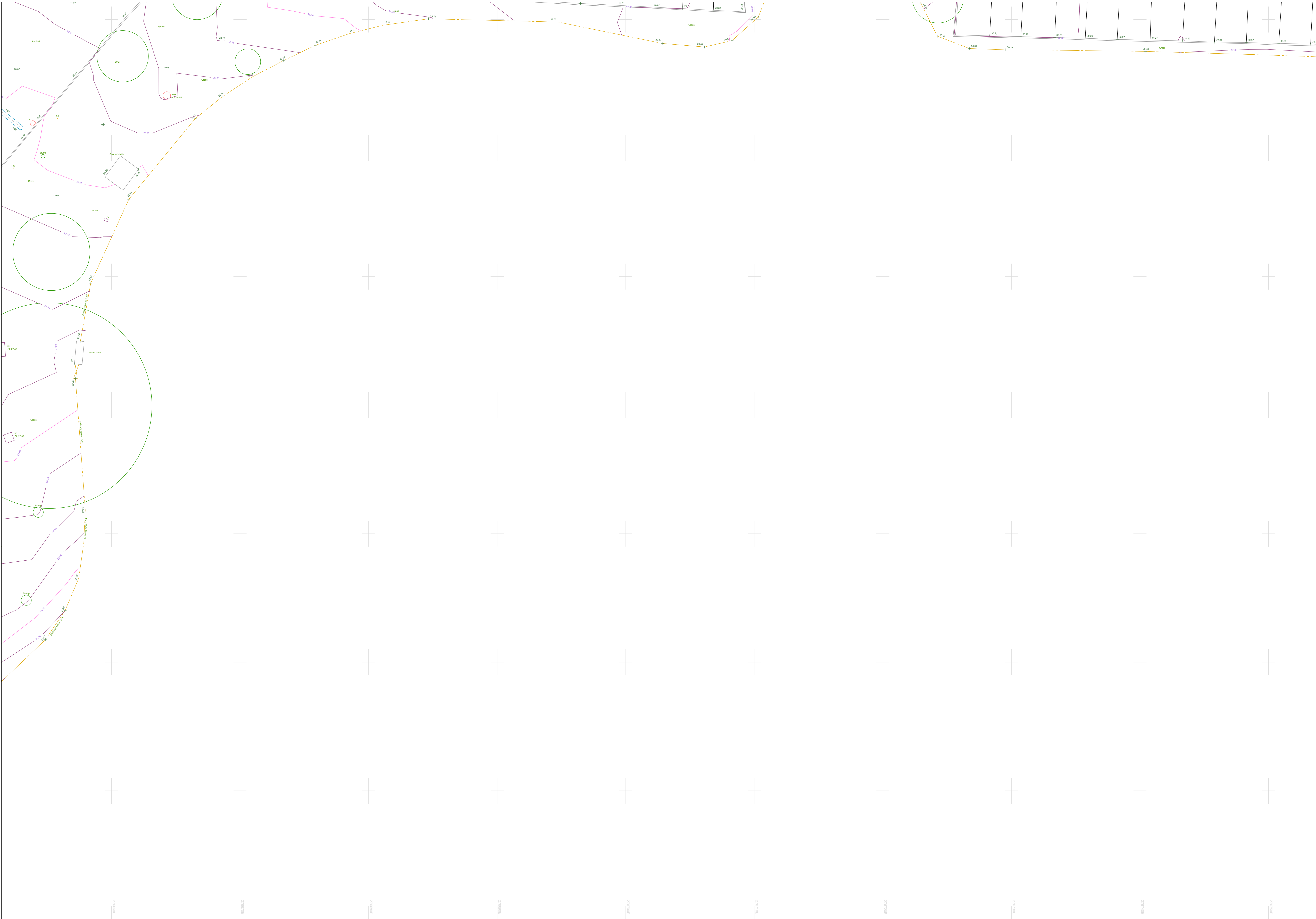
LAND | UTILITIES | BUILDING | BOUNDARY | BIM

Title: **Topographical Survey**

Project: **Llangatwg Community School**

Client: **Morgan Sindall**

Drawn: NJ/CU	Checked: DR
Date: 15.10.2024	Scale: 1:100 @ A0
Drawing Number: 3387-T-09	Rev.



Coordinate System
This survey has been oriented to the Ordnance Survey (OS) National Grid and Datum using GPS observations and the OS Active Network.

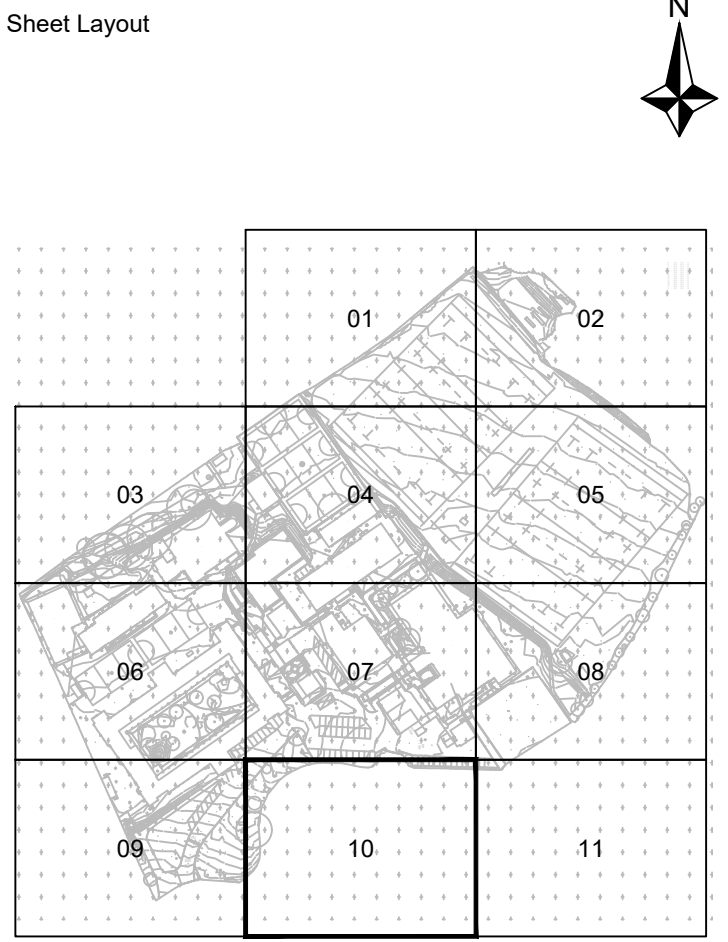
A true OS coordinate was established near to the centre of the site. This survey has been correlated to this point. Further OS coordinates were established to create a true OS bearing for angle orientation.

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- Notes**
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Key to Abbreviations	
Inspection Covers & Chambers	Walls & Fence Types
AV Air Valve	BL Block Wall
BH Baseline	BR Brick Wall
BT British Telecom Cover	BWF Barbed Wire Fence
CCP Cable Drive Pit	CB Close Boarded Fence
CV Combined Water	CI Corrugated Iron Fence
Dr Ch. Drainage Channel	CL Chain Link Fence
ELC Electric Inspection Cover	CIP Concrete Post
ER Earth Rod	GL Gabion Wall
FI Fire Hydrant	HR Hand Rail
FW Foul Water	IR Iron Railings
G Gully	Pal Palisade Fence
GC Gas Cock	PWF Post & Wire Fence
GV Gas Valve	PW Post & Wire Fence
IC Inspection Cover	Rel Retaining Wall
KD Kerb Outlet	St Stone Wall
MH Manhole	
RE Rodding Eye	Street Furniture
SC Stop Cock	B Bollard
SV Stop Valve	BB Bellisha Beacon
SW Storm Water	DP Down Pipe
TV Cable Television Cover	EP Electricity Pole
UL UpLifter	FB Flower Bed
UTL Unable to Lift	JB Junction Box
WM Water Motor	LP Lamp Post
WO Washout	MP Marker Post
	P Post
	PB Post Box
	RS Road Sign
	RWP Rain Water Pipe
	SP Sign Post
	SWP Sign Wall
	SVV Soil Vent Pipe
	TCL Traffic Light
	TP Telephone Pole
	VP Vent Pipe

Linetypes & Symbols	
— Banks	— Benking
— Buildings	— Flow Direction
— Building Overhead	— Gate
— Change of Surface	— Survey Station
— Fences	— Tree
— Kerbs	
— Overhead Cables	
— Ridges & Eaves	
— Steps	
— Walls	
— Vegetation	
— Tree Canopy	
— Combined Water	
— Foul Water	
— Storm Water	

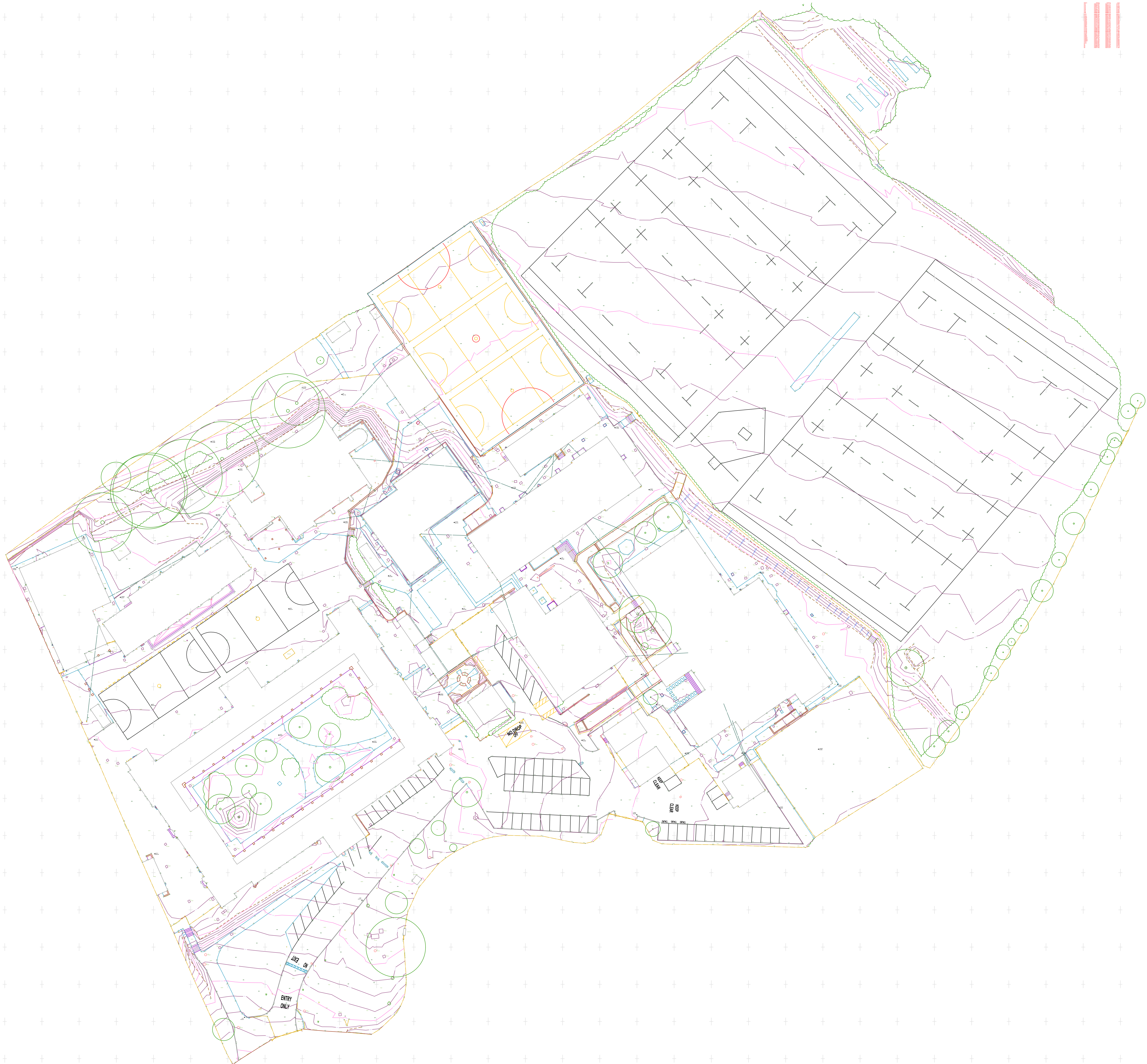


Rev.	Date	Drawn	Details
 Unit 1, Link Trade Park, Penarth Road, Cardiff, CF11 8TQ Contact: 029 2011 1700 London: 020 3011 1099 www.gwaliasurveyors.co.uk LAND UTILITIES BUILDING BOUNDARY BIM			
Title: Topographical Survey			
Project: Llangatwg Community School			
Client: Morgan Sindall			
Drawn: NJ/CU	Checked: DR		
Date: 15.10.2024	Scale: 1:100 @ A0	Rev.	
Drawing Number: 3387-T-10			

No scale factor has been applied to this survey. The coordinates shown are arbitrary and not true OS coordinates which do have a scale factor applied.

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Title: Topographical Survey		
Project: Llangatwg Community School		
Client: Morgan Sindall		
Drawn: NJ/CU	Checked: DR	
Date: 15.10.2024	Scale: 1:100 @ A0	
Drawing Number: 3387-T-11		Rev.



Coordinate System

This survey has been oriented to the Ordnance Survey (OS) National Grid and Datum using GPS observations and the OS Active Network.

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Notes

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Key to Abbreviations

Inspection Covers & Chambers	Walls & Fence Types
AV Air Valve	BE Block Wall
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Ch Ch. Drainage Channel	CL Chain Link Fence
ELC Electric Inspection Cover	CP Concrete Post
ER Earth Rod	GH Gab. Gabion Wall
FI Fire Hydrant	HR Hand Rail
FW Foul Water	IR Iron Railings
G Gully	PA Palisade Fence
GC Gas Cock	PR Post & Rail Fence
GV Gas Valve	PW Post & Wire Fence
IC Inspection Cover	RE Retaining Wall
KO Kerb Outlet	ST Stone Wall
MH Manhole	
RE Rodding Eye	Street Furniture
SC Stop Cock	S Ballast
SV Stop Valve	BB Bellisha Beacon
SW Storm Water	BP Down Pipe
TV Cable Television Cover	EP Electricity Pole
UL UpLifter	FB Flower Bed
UTL Unable to Lift	JB Junction Box
WM Water Motor	LP Lamp Post
WO Washout	MP Marker Post
	PB Post Box
	RS Road Sign
	RWP Rain Water Pipe
	SP Sign Post
	SWV Soil Vent Pipe
	TL Traffic Light
	TP Telegraph Pole
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Ground Surface Types

Asp Asphalt	RS Road Sign
B/P Brick Pavers	RWP Rain Water Pipe
Conc Concrete	SP Sign Post
Pav Concrete Paving	SWV Soil Vent Pipe
Tac Tactile Paving	TL Traffic Light
	TP Telegraph Pole
	VP Vent Pipe

Measurement Descriptions

CL Cover Level	
d Diameter (mm)	
d Depth (m)	
FFL Finished Floor Level	
h Feature Height (m)	
IL Invert Level	
SL Sump Level	
SoL Soffit Level	
WL Water Level	

Linetypes & Symbols

— Banks	— Berking
— Buildings	— Flow Direction
— Building Overhead	— Gate
— Change of Surface	— Survey Station
— Fences	— Tree
— Kerbs	
— Overhead Cables	
— Ridges & Eaves	
— Steps	
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— Vegetation	
— Tree Canopy	
— Combined Water	
— Foul Water	
— Storm Water	

Sheet Layout

Rev.	Date	Drawn	Details

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LAND | UTILITIES | BUILDING | BOUNDARY | BIM

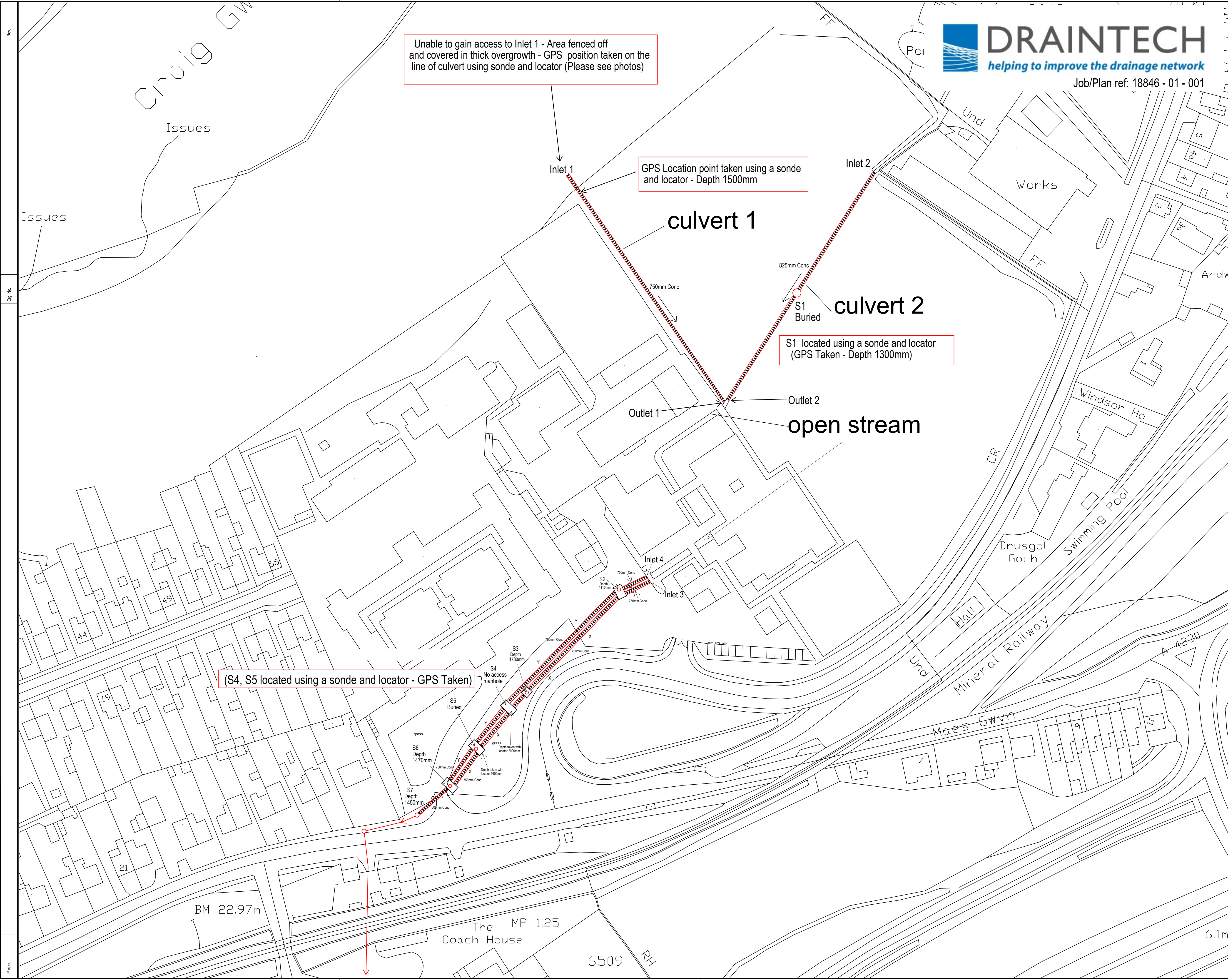
Title: **Topographical Survey**

Project: **Liangatwg Community School**

Client: **Morgan Sindall**

Drawn: NJ/CU	Checked: DR
Date: 15.10.2024	Scale: N.T.S.
Drawing Number: 3387-T-Overview	Rev:

B Watercourse CCTV Survey



Job/Plan ref: 18846 - 01 - 001

NOTES

1. All dimensions in millimetres unless otherwise stated.

Rev	Details	Dr	Ch	Apr	Date
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PROPERTY & REGENERATION
JOHN S FLOWER BSc, CEng, CEnv, FICE, MCIHT
CORPORATE DIRECTOR OF ENVIRONMENT
THE QUAYS, BRUNEL WAY
BAGLAN ENERGY PARK SA11 2GG
www.npt.gov.uk

Project
Llangatwg Comprehensive school
Under ground water culverts to
playing field

Drawing Title

<u>File No.</u>		<u>Property Ref. No.</u>			
<u>Drawn</u>		<u>Checked</u>		<u>Approved</u>	
<u>Date</u>		<u>Date</u>		<u>Date</u>	
<u>Scales</u>					
<u>Drawing No.</u>					<u>Rev.</u>

C Proposed Development Plans



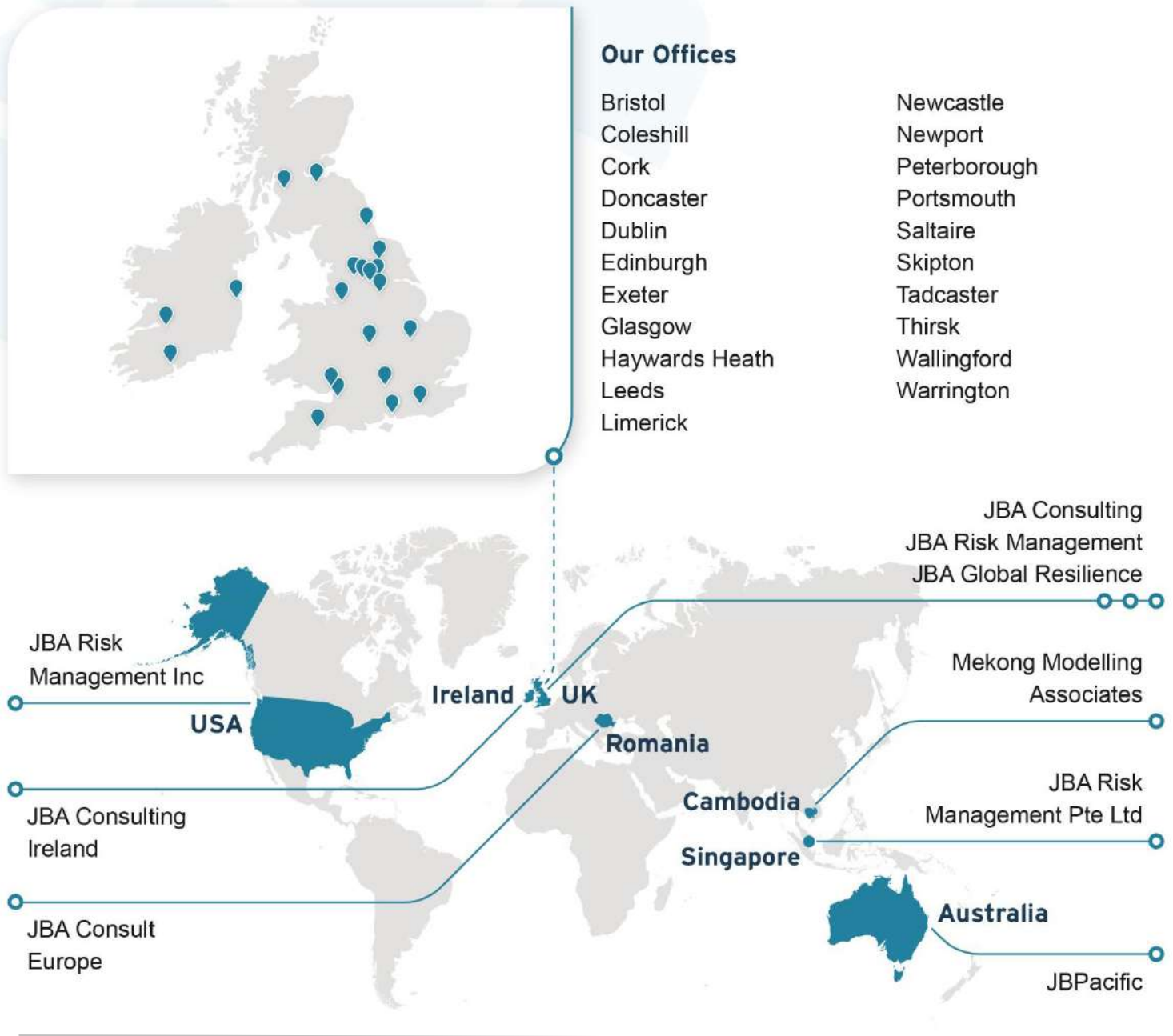
- KEY**
- Application boundary
- HARD LANDSCAPE**
- Vehicular asphalt to engineers details
 - Pedestrian asphalt to engineers details
 - Asphalt to multi-sports area to specialist's details
 - Feature paving to external spaces
 - Feature paving to courtyard
 - Block paving bands
 - Resin bound gravel
 - Bark mulch to food growing and forest school area
 - Self-binding gravel
 - Concrete slab
 - Synthetic grass sports pitch
- SOFT LANDSCAPE**
- Existing trees to be retained
 - Existing trees to be removed
 - Proposed trees
 - Proposed trees to rain gardens
 - Existing vegetation to be retained
 - Amenity grass
 - Species rich wildflower meadow
 - Ornamental planting
 - Sensory garden planting
 - Rain garden planting
 - Swales planting
 - Bioretenation planting to attenuation basin and open water channel
 - Formal hedge planting
 - Native hedge mix planting
- BOUNDARY TREATMENT**
- 2400mm high self-leveling vertical bar railings fencing to secure line - to replace existing fencing - to include 13x130mm gaps at base every 10m to allow for wildlife access
 - 3000mm high weldmesh fencing to sports areas including 1100mm high rebound fencing to lower panels where required
 - 1800mm high self-leveling vertical bar fencing to internal secure line
 - 1800mm high timber 'H&N-miss' fencing to service yard enclosures
 - 1100mm high railings
 - 1500mm high vertical bar railings to external classrooms
 - Acoustic fence to Senior pitch's western end - height to acoustic engineer's recommendation
 - 8000mm high ball catching net to Senior pitch's western end
 - 2400mm high feature wall to main entrance
 - 5000mm clear width double leaf swing gate to entrance. Height and infill panels to match adjacent fence
 - 3000mm clear width double leaf swing gate. Height and infill panels to match adjacent fence
 - 1200mm clear width single leaf swing gate. Height and infill panels to match adjacent fence
 - Manually operated lift arm to car park
- EXTERNAL FURNITURE**
- Timber seating
 - Picnic type table
 - Bollards to front entrance
 - Cycle racks
 - Door with barrier
- SUDS FEATURES**
- Attenuation basin
 - Proposed swale to civil engineer's layout and details



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