

DRAINAGE STATEMENT

McDonald's, Heads of the Valley Road, Merthyr Tydfil (ST2685)



Prepared for: McDonald's Restaurants Ltd

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Document History

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1.0 Introduction

Purpose

- 1.1 This Drainage Statement (DS) has been prepared by Glanville Consultants Ltd on behalf of McDonald's Restaurants Limited to support a planning application for the redevelopment of a brownfield site which was most recently used as a concrete plant. This report will be included in the SAB application for the proposed development.

Site Location & Description

- 1.2 The site is located in the Pengarnddu Business Park to the north east of Merthyr Tydfil, as shown in Figure 1. There is an existing Lidl supermarket to the west, a Pengarnddu Highways depot to the south and east and an existing road to the north.

Data Sources

- 1.3 Data used for this report is as follows:
- Topographical survey, Google Earth observations & historical mapping.
 - On-line Flood Maps -. NRW
 - Sewer record plans for the surrounding area.
 - Geotechnical & Geo-environmental data
 - TAN 15 – Development Flooding and Coastal Erosion
 - Flood Consequences Assessments: Climate Change
 - Preliminary Flood Risk Assessment – Merthyr Tydfil County Borough Council (MTCBC)
 - Flood Risk Management Plan – MTCBC
 - Sustainable Drainage (SuDs) Statutory Guidance
 - Revised Draft Water Resources Management Plan 2024 – Strategic Environmental Assessment - Welsh Water
- 1.4 All the level information quoted in this report refers to the Ordnance Datum, defined as the mean sea level recorded at Newlyn in Cornwall.

2.0 Flood Risk & SuDS Planning Policy

The EU Flood Directive

- 2.1 The Flood Directive (2007/60/EC) came into force in the EU in November 2007 to assess and manage flood risks in Europe. As part of the Directive, which applies to both inland and coastal waters, Member States are required to draw up a series of documents to identify flood hazards and flood risks and flood risk management plans by the end of 2015.
- 2.2 The Water Framework Directive (2000/60/EC) has been UK law since 2003. This Directive promotes water management via river basin planning and is the basis for water environment changes made in Wales.

Natural Resources Wales

- 2.3 The Environment Agency is the principal flood risk management operating authority in England and Wales and receives funding from Welsh Government and DEFRA. It was established by the Environment Act 1995, taking over the flood risk management responsibilities of the then National Rivers Authority. The Environment Agency has the responsibility of increasing flood risk awareness, forecasting and warning prior to flooding events, building and maintaining flood defences and controlling capital project grants.
- 2.4 Natural Resources Wales (NRW) oversees the management of the natural resources of Wales. It was formed from a merger of the Countryside Council for Wales, Environment Agency Wales, and the Forestry Commission Wales, and reports back to the Welsh Government.

Welsh National Flooding Policy & Guidance

- 2.5 Technical Advice Note (TAN) 15: Development and Flood Risk (2004, updated 2025) provides the technical guidance to national planning policy set out in Planning Policy Wales (PPW) with reference to development and flooding. PPW outlines a precautionary framework for the guidance of planning decisions and aims to advise caution for the creation of new developments in areas where the risk of flooding is high.
- 2.6 The Flood Map for Planning and the Flood Risk Assessment Wales (FRAW) map together make up the Wales Flood Map. The Flood Map for Planning 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 flood zone definitions are summarised in Section 3.
- 2.8 Development proposals in Zone 1 do not require any further assessment of flood risk. For development proposals located fully or partly in Zones 2 and 3, a flood consequences assessment is required.
- 2.9 TAN15 identifies the vulnerability of different land uses to flooding, and for this purpose, development has been subdivided into the three categories below: -
- Highly vulnerable: All residential premises, schools, hospitals, especially vulnerable industrial development, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood;
 - Less vulnerable: General industrial, employment, **commercial and retail development**, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites.
 - Water compatible: 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.
- 2.10 The proposed development site lies in Zone 1, as shown on Image 1, and is classified as Less Vulnerable.

Local Flood Risk Policy

- 2.13 Merthyr Tydfil County Borough Council (MTCBC) is the Lead Local Flood Authority (LLFA) and produced a Flood Risk Management Plan in June 2015. Key points of relevance to this development are:-

- Overarching objective to reduce Flood Risk in all of the areas identified as being subject to significant flood risk”
- MTBC has identified a range of detailed measures to deliver the objectives of the FRMP, which fall into four categories:
 1. Prevention of flooding
 2. Preparedness for flooding
 3. Protection against flooding
 4. Recovery and Review.
- The FRMP identifies a potential flood risk in Dowlais related to discharge from the Top Pond reservoir from sources including accumulation of surface water in the Dowlais Top and Pengarnddu Industrial Estates. This risk can be mitigated through prevention at source.

Welsh National SuDS Policy & Guidance

- 2.14 Schedule 3 of the Flood and Water Management Act provides a framework for approval and adoption of surface water systems serving new developments. Under the Act, all new developments of more than 1 dwelling house or where construction is 100m² or more, will require SuDS. The SuDS must be designed and built in accordance with the Statutory SuDS standards and approved by the SuDS Approving Body (SAB) before construction begins.
- 2.15 Under Schedule 3 of the Act, local authorities as the SAB have a duty to approve SuDS which follow national statutory standards for SuDS. With the exception of single curtilage sites, the SAB also has a duty to adopt the system.
- 2.16 Paragraph 2 of Schedule 3 to the 2010 Act defines sustainable drainage as managing rainwater with the aim of: -
- Reducing damage from flooding,
 - Improving water quality,
 - Protecting and improving the environment,
 - Protecting health and safety, and
 - Ensuring the stability and durability of drainage systems
- 2.17 The Sustainable Drainage (SUDS) Statutory Guidance document includes the following key points of relevance to this development:-
- Designers should consider the CIRIA SuDS Manual for the range of available solutions.
 - Early engagement with SAB's and other stakeholders is encouraged.
 - An application for SAB approval can be made separately or alongside a planning application.
 - SAB application should be accompanied by a Maintenance Plan.
- 2.18 The Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems includes standards and guidance for the following: -
- S1. Surface water runoff destination
 - S2. Surface water runoff hydraulic control
 - S3. Water Quality
 - S4. Amenity
 - S5. Biodiversity
 - S6. Design of drainage for construction, operation and maintenance

SAB for Merthyr Tydfil

- 2.19 Merthyr Tydfil County Borough Council is the SAB for developments in Merthyr Tydfil. A submission has been made for pre-application advice and MTCBC's response is included in Appendix D. In summary, MTCBC raised a number of issues and generally requested that consideration should be given to maximising source control SUDs, amenity and bio-diversity within the drainage proposals.
- 2.20 Since the request for pre-application advice was submitted, the proposed development area has been increased, creating the opportunity to incorporate additional areas of landscaping and bio-retention into the drainage layout. The design response is described in more detail in Section 5.



3.0 Existing Conditions and Sources of Flooding

Topography

- 3.1 The site is currently disused, having most recently been used as a concrete plant.
- 3.2 Existing concrete hardstanding covers part of the site and a bund of made ground has been formed along the north and south western boundaries. There are two existing residential properties in the eastern corner of the site.
- 3.3 Generally, the site levels ranging from 385m to 383.5m, representing an average gradient of 1:25. There is a slope down to the boundary with the Council Highways depot, which approximately 1m lower at around 382.5m. At the time of the survey, there were stockpiles of highways construction materials within the Council's depot, which accounts for the range in levels along the south eastern boundary.

Geology & Ground Conditions

- 3.4 The British Geological Survey (BGS) mapping indicates that the site is underlain by Made Ground over Till (clays and silty clays) over the South Wales Lower Coal Measures Formation.
- 3.5 The site is in the Coal Mining High Development Risk Area of the South Wales Coal Mining Reporting Area.

Groundwater Quality

- 3.6 Geological records indicate the bedrock aquifer designation is 'secondary A' and the superficial deposit are 'Secondary Undifferentiated'. Groundwater in this location is recorded as having a low vulnerability and is not within a source protection zone.

Fluvial Flooding

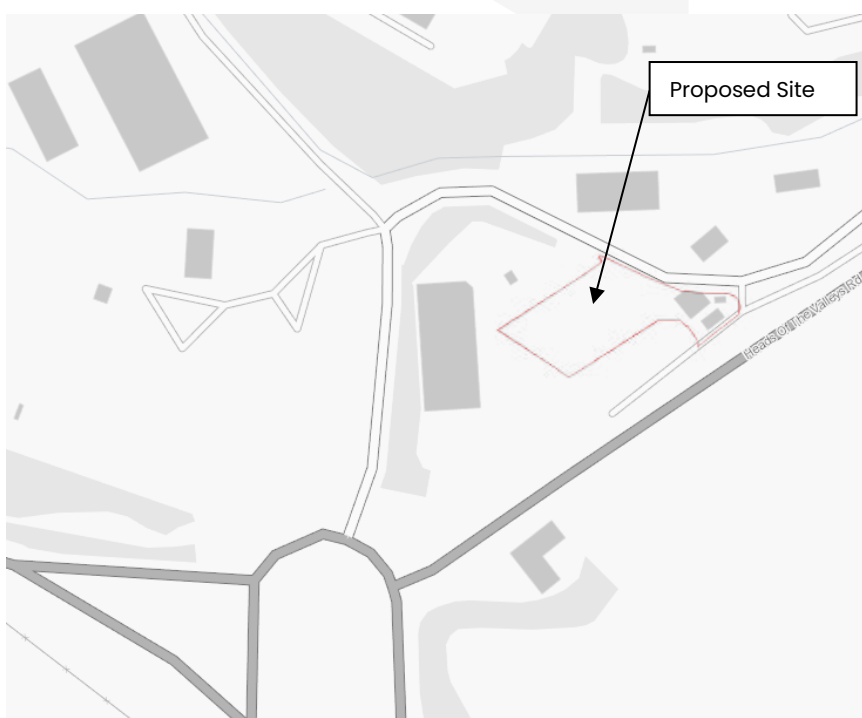
- 3.7 Flood Zone definitions are set out in TAN 15 as follows: -
- Flood Zone 1 - land assessed as having a less than 1 in 1,000 annual probabilities of river or sea flooding (<0.1%)
 - Flood Zone 2 - land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year
 - Flood Zone 3 - land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year
 - TAN 15 Defended Zones – Areas where flood risk management structure provides a minimum standard of protection against flooding from rivers of 1:100 (+climate change and freeboard).

Image 1: NRW - Flood Risk Map for Planning



- 3.8 Image 1 indicates that the site is located in Flood Zone 1 for Rivers and sea. The topographic survey, refer to Figure 2, shows the site levels and exceedance routes.
- 3.9 The Natural Resources Wales (NRW), Flood Map for Planning website, see Image 2, does not show any historical flooding to have affected the site.

Image 2: NRW – Recorded Flood Extents



Groundwater Flooding

- 3.10 The Geo-Environmental Desk Study indicates the site has limited potential for groundwater flooding to occur at the surface.

Overland (Pluvial) Flooding

- 3.11 The Natural Resources Wales, Flood Map for Planning website, see Image 3, indicates the majority of the site to have a Zone 1 flood risk of surface water flooding. There is a small area of Zone 2 surface water flood risk within the existing site, close to the south eastern boundary. The existing highway to the east of the site is in Zone 3 for surface water flooding.

Image 3: Surface Water & Small Watercourses Flood Risk Map

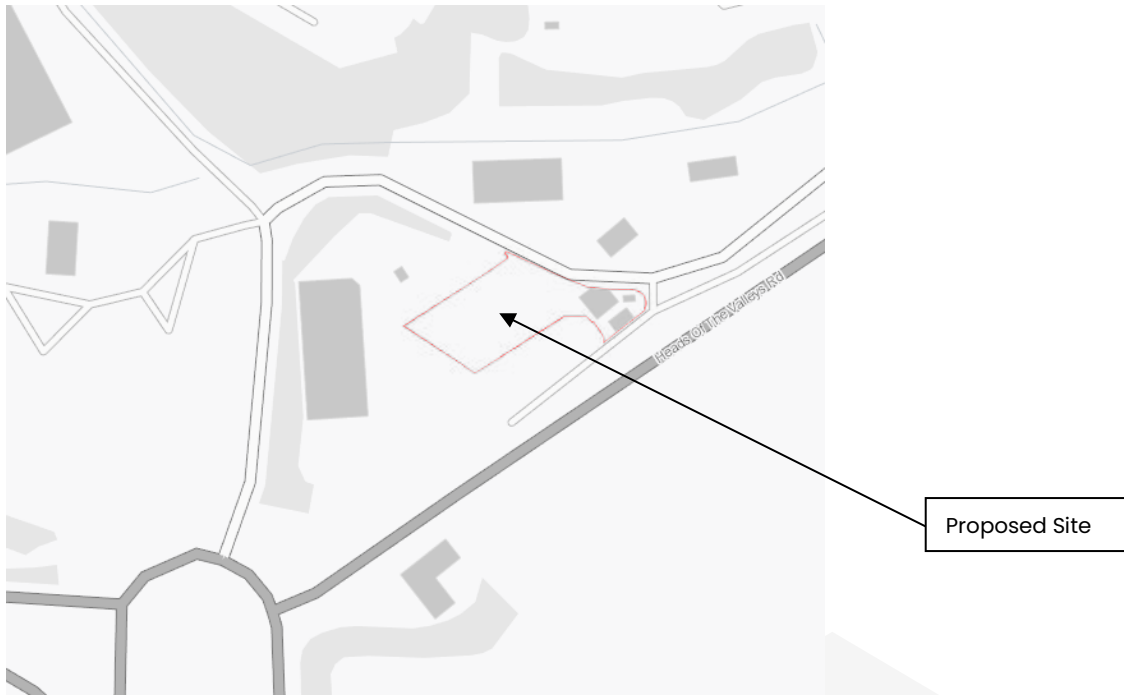


- 3.12 The topographic survey, refer to Figure 2, shows the site levels and exceedance routes. There is a slight low point along the south eastern boundary in part formed by the material stockpiles that appears to correspond to the area of surface water flood risk shown on Image 3.

Flooding from Reservoirs, Canals and other Artificial Sources

- 3.13 The NRW website indicates the site to be outside the area at risk of reservoir flooding, as shown in Image 4.

Image 4: NRW - Reservoir Flood Breach Extent Map



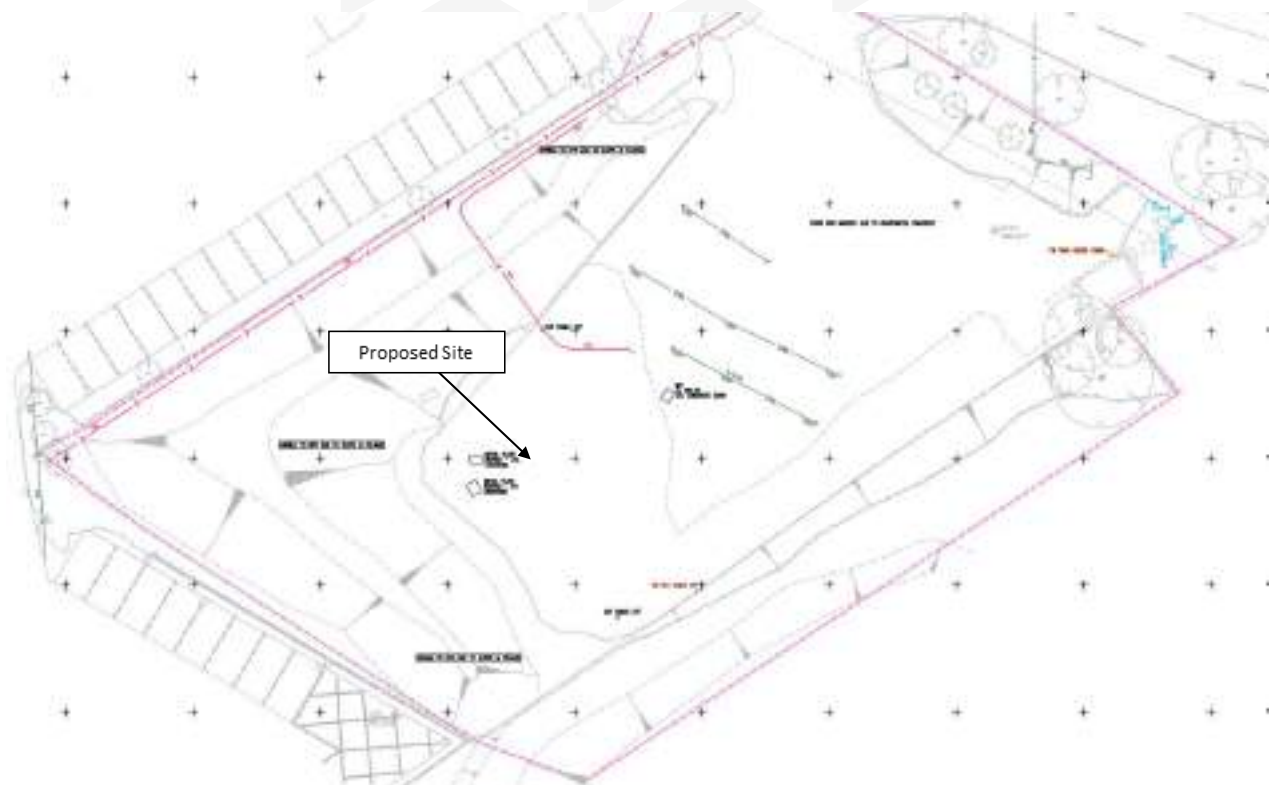
Existing Public Sewer Flooding

- 3.14 The public sewer records, refer to Image 5, do not show any public sewers running within the site boundary. There are existing public foul 225mm diameter and surface water 450mm diameter sewers located in the roundabout to the west of the site entrance and flowing in a southerly direction.
- 3.15 The topographic survey, as shown in Figure 2, and sub-scan, refer to image 6, show an unidentified manhole but otherwise no drainage was found.

Image 5: Public Sewer Records Extract



Image 6: Site Sub Scan Extract



4.0 Development Flood Risk

Development Proposals

- 4.1 The proposed development consists of a McDonald's Restaurant with associated drive-thru lane and car park. The development layout can be seen in Figure 3.

Flood Risk Management

- 4.2 The development design includes flood risk reducing features which are listed in Table 1. The following sub sections of this chapter describe in more detail each of the potential sources of flooding and how the development design features will reduce these risks.

Table 1: Flood Risk Reducing Design Features

Possible Design Features	In this Design	Description of Feature	Flood Risk Reduction
Surface levels & FFL	Yes	Surfaces drained into the SuDS. Exceedance flow routes are checked to ensure they do not create a new flood risk.	Pluvial
SuDS Drainage	Yes	1:100 + climate change allowance included within drainage system.	Pluvial /drainage flooding
Flood Resilience Measures	No	Not required as buildings are not expected to flood	N/A
Flood Compensation	No	Not required as not developing within a flood plain.	N/A
Flow Control Devices	Yes	Infiltration is not possible. Discharge limited to Qbar (or the 1 in 1 year critical storm event if lower) for all storms up to and including the 1:100 year + climate change critical storm	Pluvial & sewer flooding
Safe Pedestrian Escape Route	Yes	The site is dry as it is outside the floodplain.	Fluvial
Safe Escape Route Vehicular	Yes	The site is dry as it is outside the floodplain.	Fluvial
Dry parking area	Yes	As not in the flood plain, all parking areas are dry.	Fluvial
Flood Emergency Plan	No	Not required, as development is not in a floodplain.	N/A

Tidal & Fluvial Flooding

- 4.3 The development is outside the floodplain. Therefore, no design features are required to address fluvial flood risks to the development. Hence, the risk of fluvial flooding will remain very low.

Groundwater Flooding

- 4.4 The site level design will ensure that in the unlikely event that any groundwater does flood at surface level, the proposed overland flow routes do not create a risk to the development (see Figure 6).

Overland Surface Water Flooding (Pluvial) On Site

- 4.5 The proposed overland flow paths and levels are shown in Figure 6 with the existing flow paths shown in Figure 2. In addition, the improved on-site drainage and raised building FFL will ensure that any pluvial flooding is routed overground to avoid a risk to the development and to match existing flow routes through the site.

Overland Surface Water Flooding from the Site onto Surrounding Land

- 4.6 The proposed on-site drainage system will be designed to accommodate a 1 in 100 plus climate change rainfall event, without creating a flood hazard. If an exceedance event occurs (greater magnitude than 1 in 100 plus climate change storm event) then the existing overland flood routes on and off the site will not be changed by the development, so the development cannot adversely impact surrounding land, see Figures 2, 5 and 6.

Flooding from Reservoirs, Canals and other Artificial Sources

- 4.7 No artificial sources of flooding have been identified.

Sewer Flooding

- 4.8 The proposed development foul and surface water drainage layouts are shown in Figures 5 and 7. The new foul drainage infrastructure on the site will be designed in accordance with Building Regulations and therefore no significant flood risk is expected from the proposed on-site foul water drainage.
- 4.9 The new on-site surface water drainage is going to be designed to accommodate a 1 in 100 year plus climate change event without creating a flood hazard and therefore the risk of flooding is low.
- 4.10 Any flooding from existing sewers will follow existing exceedance flow routes to avoid creating a flood risk to the development. Any exceedance flows leaving the site will follow the existing exceedance routes, so no new flood risks will be created downstream, see Figure 6.

Flood Impacts, Mitigation and Residual Effects

- 4.11 Table 2 below rates the different flood risks to the development, considering the development design proposals as described in this report. Design proposals are not considered to be mitigation, but any action required in addition to the current design proposals is considered mitigation and listed in the table. We have rated the risks as none, low, medium and high based on our assessment of the facts relating to each source of flooding and the potential hazards.

Table 2: Residual Flood Risk

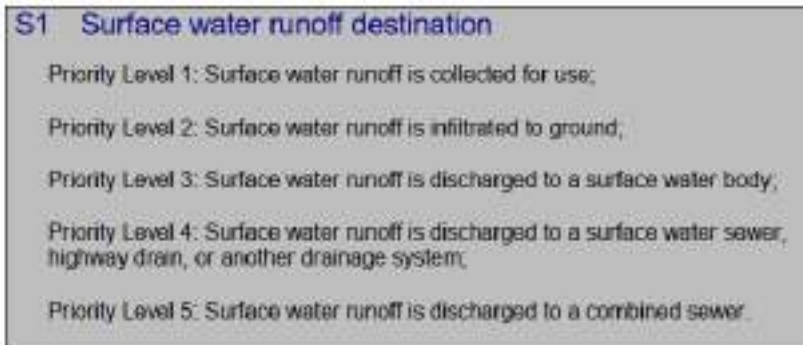
Type of Flood Risk	Flood Risk Rating None Low Med High	Mitigation required	Mitigation Measure
Fluvial Flooding	Low	No	None
Groundwater flooding	Low	No	None
Overland SW flooding from adjacent land	Low	No	None
Overland SW flooding onto adjacent land	Low	No	None
Flooding from reservoirs	Low	No	None
Flooding from sewers	Low	Yes	Normal maintenance of drainage systems

5.0 Proposed Sustainable Drainage

Statutory Standards for SuDS

- 5.1 The Statutory Standards for SuDS are referenced in this section, with a description of the SuDS proposed and how they comply with the standards.

S1 – Surface water runoff destination



- 5.2 Merthyr Tydfil is located in the South East Wales Conjunctive Use System (SEWCUS) water Resource Zone. This area is shown to be in surplus in Image 7 below, which contains an extract from Welsh Water's Revised Final Water Resources Management Plan 2024 – Strategic Environmental Assessment. In accordance with Level 1 – Rainwater collected for use, at this site 'There is no foreseeable need to harvest water at the site as the relevant water undertaker's water resources and drought management plans do not identify potential stresses on main water supplies'.

Image 7: WRZ Supply / Demand Map

Figure D.14 Welsh Water WRZs with supply demand deficit over the planning period to 2050



Source: Welsh Water (2019) Final Water Resources Management Plan 108

- 5.3 Consideration has been given to rainwater harvesting, however the restaurant is of modular construction to a standard design which is not set up for rainwater recycling. Water demand is also high so any recycling would need to be accompanied by a backup water supply and a very large recycling tank, negating the environmental benefits.
- 5.4 Level 2 – Discharge of surface water into the ground. The desk study and preliminary results from the intrusive investigation received to date, refer to extracts in Appendix A, indicate the presence of deep made ground overlying a series of siltstones, mudstones, sandstones and layers of coal. Therefore, infiltration is not feasible.
- 5.5 Level 3 – Discharge to a Surface Water body. There are no surface water bodies either on site or near-by to which a connection can be made for a new surface water discharge.
- 5.6 Level 4 – Discharge to a Surface Water Sewer. There are existing public surface water sewers located in the highway to the west of the site. It is therefore proposed to discharge to the existing 450mm diameter sewer in the roundabout, see Image 5.

S2 – Surface water runoff hydraulic control

S2 Surface water runoff hydraulic control

- 1) Surface water should be managed to prevent, so far as possible, any discharge from the site for the majority of rainfall events of less than 5mm.
- 2) The surface water runoff rate for the 1 in 1 year return period event (or agreed equivalent) should be controlled to help mitigate the negative impacts of the development runoff on the morphology and associated ecology of the receiving surface water bodies.
- 3) The surface water runoff (rate and volume) for the 1% (1 in 100 year) return period event (or agreed equivalent) should be controlled to help mitigate negative impacts of the development on flood risk in the receiving water body.
- 4) The surface water runoff for events up to the 1% (1 in 100 year) return period (or agreed equivalent) should be managed to protect people and property on and adjacent to the site from flooding from the drainage system.
- 5) The risks (both on site and off site) associated with the surface water runoff for events greater than the 1% (1 in 100 year) return period should be considered. Where the consequences are excessive in terms of social disruption, damage or risk to life, mitigating proposals should be developed to reduce these impacts.
- 6) Drainage design proposals should be examined for the likelihood and consequences of any potential failure scenarios (e.g. structural failure or blockage), and the associated flood risks managed where possible.

- 5.7 Point 1 – Interception of runoff. The proposed permeable pavements and bio-retention strips will provide interception and attenuation of run-off during the short and low intensity rainfall events including the first 5mm of rainfall. Due to the site constraints, some parts of the proposed catchment will be positively drained via kerb drains and catchpit manholes, before discharging via an oil separator to an attenuation tank.
- 5.8 Point 2 – Morphological protection of receiving surface water bodies. It is proposed that a range of measures, including permeable pavements, bio-retention strips and a cellular storage and oil separator will be utilised with a flow control device to provide a green field run-off rate for a range of

rainfall events including the 1:100 year plus climate change event. Refer to the drainage calculations in Appendix B.

- 5.9 Point 3 – Flood risk mitigation for receiving surface water bodies. Runoff will be disposed of to the public surface water sewer via a pumped system with a discharge rate limited to the existing 1 in 1 year green field runoff rate, for all events up to and including the 1:100 year plus climate change event. Runoff volume control is provided on-site as described above. Refer to the drainage calculations in Appendix B.
- 5.10 Point 4 – Flood protection for the site. The drainage system will be designed to contain all events up to the 1:100-year event, allowing for climate change. The maximum water level in the drainage system will never exceed a level 300mm (freeboard) below the finished flood level of the restaurant. Refer to the drainage calculations in Appendix B.
- 5.11 Point 5 – Extreme exceedance management of surface water runoff. An exceedance 1:500 event has been modelled, with results shown in Appendix B. The site is not expected to flood due to the failure of the onsite drainage system, as the proposed storage would contain the resulting runoff volume.
- 5.12 Point 6 – Evaluation of impact of potential failure of the drainage system. Pipe blockage in certain locations could prevent effective conveyance of the drainage run-off creating greater flooding on site. To mitigate against this risk, catchpit manholes are used to capture sediment which might enter the drainage system. The separate Drainage Maintenance Plan includes procedures for regular maintenance and inspections to reduce the risk of blockage.

S3 – Surface water quality management

S3 Surface water quality management

Treatment for surface water runoff should be provided to prevent negative impacts on the receiving water quality and/or protect downstream drainage systems, including sewers.

- 5.13 Interception is provided by permeable pavements, bio-retention strips and channels and gullies which capture run-off from paved areas. This is a tightly constrained site and it is not possible to drain the whole of the proposed catchment to the bio-retention areas. These areas will discharge through a proprietary oil separator. This will reduce contaminant loadings.
- 5.14 Ciria pollution treatment measures have been applied to ensure treatment of the surface water. The pollution control measures are designed to minimise the transmittal of any pollutants, collected by runoff flowing over hard paved areas and into the existing drainage system. Where the runoff is not captured by the permeable pavements and bio-retention strips, pre-treatment is provided with channels with outlet sumps and catchpit manholes to remove silt and prolong the life of the pollution control treatment media. Pollution control measures for this site include permeable pavement, bio-retention strips and proprietary SPEL coalescer ESR10/C1 petrol interceptor prior to discharge to the public surface water sewer.
- 5.15 The suitability of the pollution control measures is quantified in accordance with CIRIA 753, pollution hazard indices. Comparing the pollution hazard indices in Table 3, for each catchment type, with the total pollution mitigation indices in Table 4, it can be seen that the suggested drainage system will be sufficient to mitigate the expected pollution from roofs and paved areas. See mitigation formula below and Appendix C for the product details.

*Total SuDS Mitigation Index must be $\geq$ Each Catchment's Pollution Hazards Index
 (For each contaminant type)*

Total SuDS Mitigation Index = 1st Stage Mitigation Index + 0.5 (2nd Stage Mitigation Index)

Table 3: Pollution Hazard Indices

Catchment Type	Pollution Hazard Level	Requirements for Discharge to Groundwater	Pollution Hazard Indices		
			Suspended solids	Metals	Hydrocarbons
Restaurant Roof	Low	Simple index approach	0.3	0.4	0.05
Restaurant parking	Medium	Simple index approach	0.7	0.6	0.7

Table 4: Total Pollution Mitigation Indices

Type of Pollution Mitigation (SuDS)	Pollution Mitigation Indices		
	Suspended solids	Metals	Hydrocarbons
1. Permeable Pavements			
Permeable Pavement	0.7	0.6	0.7
Total treatment indices	0.7	0.6	0.7
2. Bio-retention Areas			
Bio-retention Strip	0.8	0.8	0.8
Total treatment indices	0.8	0.8	0.8
3. Remaining Catchment			
SPEL Petrol interceptor with coalescer ESR 10/C1	0.8	0.6	0.9
Total treatment indices	0.8	0.6	0.9

S4 – Amenity

S4 - Amenity

The design of the surface water management system should maximise amenity benefits.

- 5.16 The site is relatively small and near fully utilised due to the drive-thru and parking requirements. Green spaces are created wherever possible and used for planting to create an amenity benefit. There is a bio-retention strips along the southern boundary of the site that leads to a larger rain garden, located next to the cycle route to the east of the site. This has been co-ordinated with the landscape design and will maximise the amenity benefit.

S5 – Biodiversity

S5 - Biodiversity

The design of the surface water management system should maximise biodiversity benefits.

- 5.17 The site occupies an area of approximately 4,125m² currently partly impermeable (roofs and concrete hardstanding). The proposed site layout maximises the land for use as drive-thru and parking requirements. However green spaces are created wherever possible and used for planting to create amenity benefit. Bio-retention strips have been incorporated within the planted areas, where levels and space permit.
- 5.18 The proposed landscape plan details the proposed planting, and maintenance requirements throughout the life of the development. The existing and proposed impermeable and permeable areas are shown in Figure 4 and Table 5.

Table 5: Impermeable and permeable areas (including additional parking area)

Scenario	Uses/finishes		
	Impermeable (sqm)	Permeable	Total
Existing site	1,668	2,457	4,125
Proposed site	2,775	1350	4,125
Gain/Loss (+/-)	+1107	-1107	0

S6 – Design of drainage for Construction, Operation and Maintenance and Structural Integrity

S6 – Design of drainage for Construction, Operation and Maintenance

- 1) All elements of the surface water drainage system should be designed so that they can be constructed easily, safely, cost-effectively, in a timely manner, and with the aim of minimising the use of scarce resources and embedded carbon (energy).
- 2) All elements of the surface water drainage system should be designed to ensure maintenance and operation can be undertaken (by the relevant responsible body) easily, safely, cost-effectively, in a timely manner, and with the aim of minimising the use of scarce resources and embedded carbon (energy).
- 3) The surface water drainage system should be designed to ensure structural integrity of all elements under anticipated loading conditions over the design life of the development site, taking into account the requirement for reasonable levels of maintenance.

- 5.19 The Drainage layout incorporates the proposed SuDS measures is shown in Figure 5. Product details are provided in Appendix C. A separate Maintenance Plan details the maintenance regime required for the proposed SuDS system. The design life of all materials is at least as long as the design life for the development which is 50 -75 years.

Selected Sustainable Drainage Measures

5.20 The selection of SuDS techniques for this site has followed the SuDS management train concept explained in the SuDS Manual. The concept is to use drainage techniques in series to incrementally reduce pollution, flow rates and volumes. The hierarchy of techniques to be used are as follows: -

- Prevention - prevent runoff & pollution e.g., rainwater re-cycling and road sweeping.
- Source Control - control runoff at or near its source e.g., local infiltration methods.
- Site Control - routing water to site controls e.g., pipes to a large detention basin.
- Regional Control - routing water from several sites to regional controls e.g., pipes to a balancing pond or wetland.



- 5.21 The proposed surface water drainage layout is shown in Figures 5 and 7 and includes the following features: -

Proposed Development Site

- The proposed parking bays within the car park will be formed with lined permeable pavements where they are not over-run by delivery vehicles. These parking bays will also receive runoff from the adjacent circulation lanes.
- The areas of landscaping will incorporate bio-retention strips that will receive surface water runoff from the adjacent pavement, where levels permit.
- This is a tight site with fixed boundary levels, therefore there are some parts of the catchment that do not fall towards either the permeable pavement or the bio-retention strips. These will drain via channel drains. A SPEL Petrol interceptor is incorporated to ensure that runoff from these areas receives the appropriate level of treatment before discharging to the attenuation tank.
- A cellular attenuation tank provides additional attenuation of run-off using a flow control device located downstream of the storage.
- The outflow into the existing system will be restricted to the 1 in 1 year critical storm, for all storms up to the 1 in 100 year event plus climate change.

- 5.22 These sustainable drainage measures have been selected for the site conditions and are suitable for the constant use and daily maintenance required for a McDonald's site. These systems are tried and tested on similar sites where permeability is not feasible, and the site area cannot accommodate larger open drainage features.

Climate Change

- 5.23 Climate Change allowances were updated in September 2021. The new climate change allowances are 20% and 40% for the central and upper estimate respectively. This is for the period from 2070-2115 which is consistent with a design life of 75 years. Advice states 'As a minimum, development proposals should be assessed against the central estimate to inform design levels'.

Flow Rates & Attenuation

- 5.24 Existing and proposed impermeable areas have been calculated and are shown in Figure 4. These areas have been used to calculate the existing and proposed discharge from the site for a range of storm events.
- 5.25 Table 6 shows the existing and proposed discharge rates from the drainage system with attenuation proposed to cater for surface water storm events up to a 1 in 100 year storm event plus 40% climate change. The full calculation results are shown in Appendix B. The proposed surface water discharge from the site to the sewer is limited as shown below.

Table 6: Existing & Proposed Flows & Attenuation

Storm Event (Annual Exceedance Probability)	Greenfield Run Off Rate (l/s)	Proposed Discharge Rate	Attenuation Provided (m ³)
QBar	6.3		
1 in 1	5.5	5.5	166
1 in 30 (3.3% AEP)	11.3		
1 in 100 (1% AEP)	13.7		
1 in 100 (1% AEP) plus 40%	-		

Foul Water (FW) Drainage Strategy

- 5.26 The development will generate foul water flows which will flow via gravity to an on-site pump station. From there, the flows will be pumped to the existing public foul sewer that is located in the highway to the east, as shown in Figure 7. A pre-development enquiry will be submitted to Welsh Water.
- 5.27 The restaurant drainage includes an alarmed grease trap for all the kitchen waste pipework to ensure drains do not lose capacity due to grease build up and to prevent grease entering the public sewers.



6.0 Further Investigations & Approvals

- 6.1 The information in this report is sufficient to demonstrate the suitability of the proposed development in respect of Flood Risk and Sustainable Drainage. This information will be part of the SAB Application for SuDS approval and to the planning authority. The drainage proposals shall be implemented in accordance with the SAB approval, inspected during construction as required, and as built records produced to the SAB authority at completion of the works.
- 6.2 The detailed drainage design must comply with the Welsh Building Regulations and approval will be required from a qualified Building Inspector.
- 6.3 Surface water must be carefully managed on site during construction to safeguard the works and neighbouring land from flooding and to ensure protection of natural water resources and ecology.



7.0 Conclusion

- 7.1 The development proposals have been designed after consideration of national and local planning policy and best practice guidance, in the context of the proposed use and site conditions.
- 7.2 Flood risks within the site have been assessed and are acceptable. The proposed design ensures that flood risks are reduced further by raising the restaurant floor level and provision of improved on-site drainage.
- 7.3 The development's surface water drainage strategy follows the Statutory Standards for sustainable drainage systems. Infiltration is not feasible at this site and therefore runoff is discharged into the existing public surface water drainage system. The proposed discharge rate is restricted to the existing 1 in 1-year greenfield runoff rate, for all design storms. The sustainable surface water drainage system is designed to accommodate a 1:100-year event plus the appropriate climate change allowance for this site without flooding.
- 7.4 A SuDS maintenance schedule has been provided to demonstrate the maintenance proposals in a separate Glanville report entitled 'Drainage Maintenance Plan'.
- 7.5 In summary, the development proposals comply with relevant standards for flood risk and sustainable drainage.

Figures





NOTES

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KEY:

APPLICATION BOUNDARY

FIGURE 1

P2	SITE BOUNDARY UPDATED	16.09.25	CDR	JC
P1	FIRST ISSUE	20.06.25	CDR	JC
Rev.	Description	Date	By	Chkd



Survey > Plan > Engineer

 Civil Engineering

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Cambridgeshire

Bristol

Client :



Project :

McDONALD'S RESTAURANT
HEADS OF VALLEY ROAD, MERTHYR TYDFIL
CF48 2YG (ST2685)

Title :

SITE LOCATION PLAN

Engineer : CDR

Date : MAY 2025

Director : JC

Scale : 1:250 @ A1

Status :

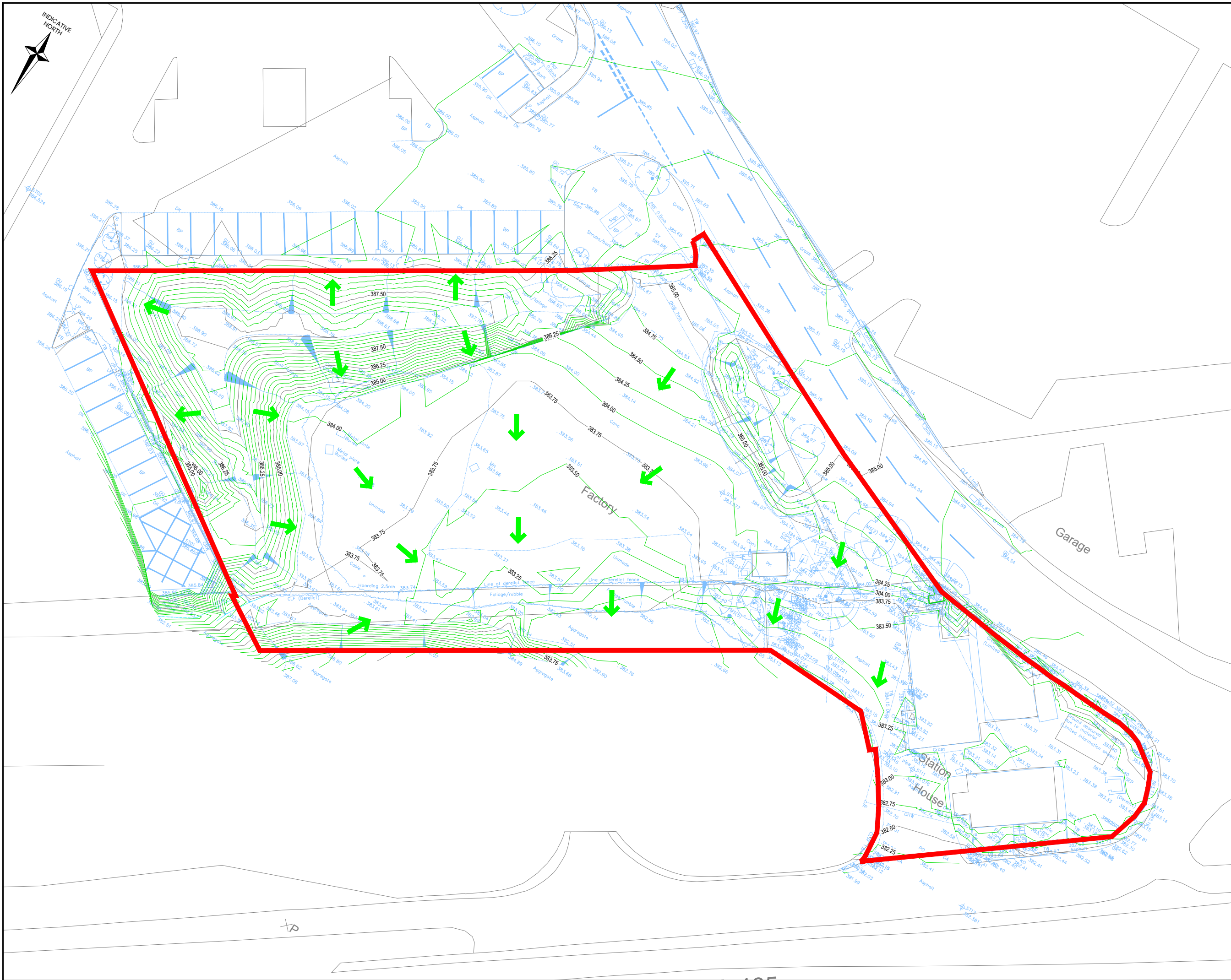
PRELIMINARY

Drawing No.

4240241-SK01

Rev

P2



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KEY:

- APPLICATION BOUNDARY
- TOPOGRAPHICAL SURVEY
- OS MAP
- EXISTING OVERLAND FLOW ROUTE
- EXISTING 0.10m CONTOURS BASED ON TOPOGRAPHICAL SURVEY

FIGURE 2

P2	SITE BOUNDARY UPDATED	16.09.25	CDR	JC
P1	FIRST ISSUE	20.06.25	CDR	JC
Rev	Description	Date	By	Chkd

Civil Engineering
Structural Engineering
Transport Planning

Highways Engineering
Building Surveying
Geomatics

Hertfordshire | Oxfordshire | Cambridgeshire | Bristol

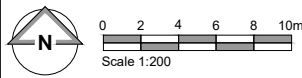
Client: McDonald's RESTAURANT

Project: MCDONALD'S RESTAURANT
HEADS OF VALLEY ROAD, MERTHYR TYDFIL
CF48 2YG (ST2685)

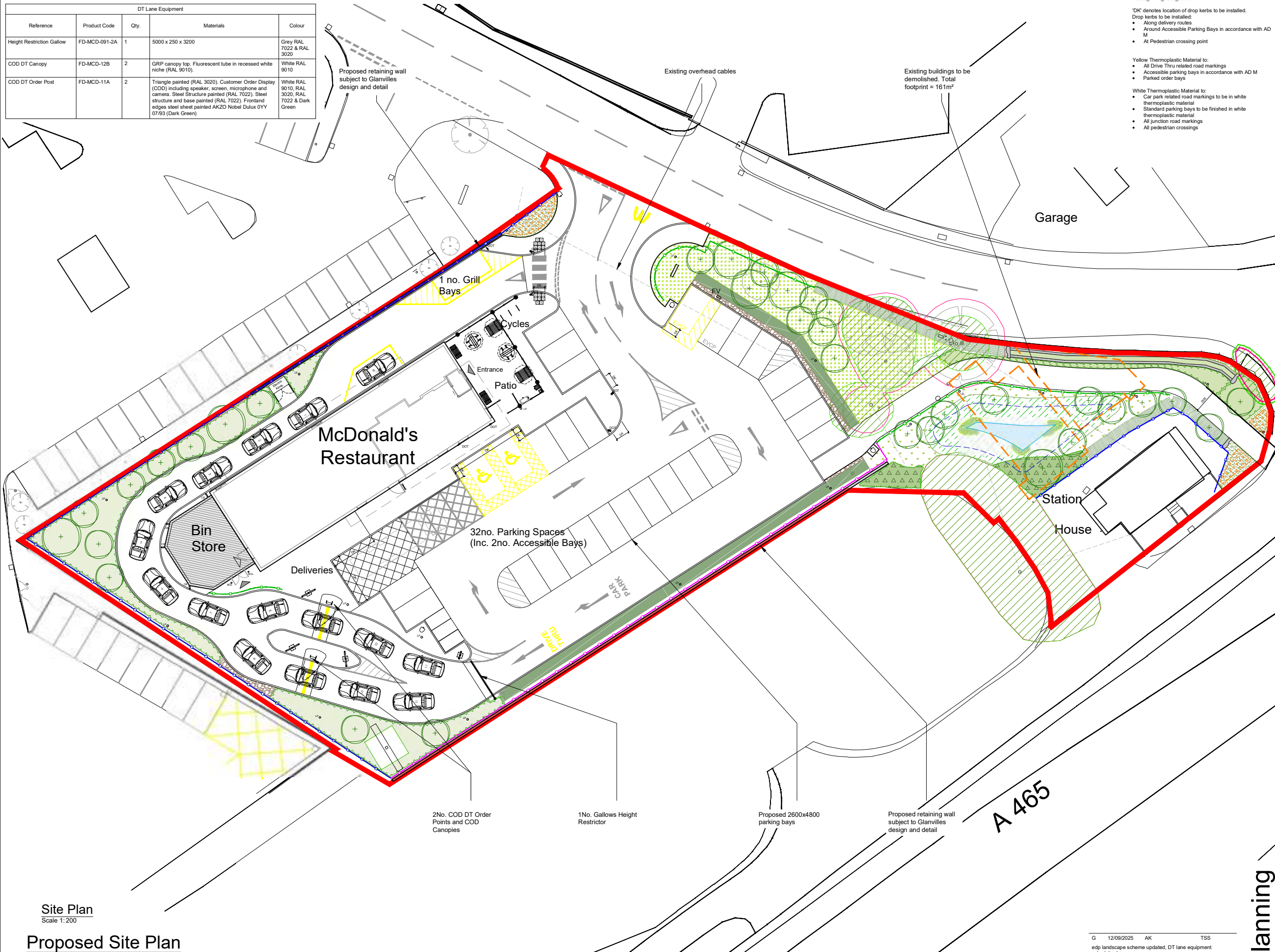
Title: EXISTING SITE SURVEY
AND OVERLAND FLOW ROUTES

Engineer: CDR	Date: MAY 2025
Director: JC	Scale: 1:200 @ A1
Status: PRELIMINARY	

Drawing No. 4240241-SK02	Rev P2
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DT Lane Equipment				
Reference	Product Code	Qty.	Materials	Colour
Height Restriction Gallow	FD-MCD-091-2A	1	5000 x 250 x 3200	Grey RAL 7022 & RAL 3020
COD DT Canopy	FD-MCD-12B	2	GRP canopy top. Fluorescent tube in recessed white niche (RAL 9010).	White RAL 9010
COD DT Order Post	FD-MCD-11A	2	Triangle painted (RAL 3020). Customer Order Display (COD) including speaker, screen, microphone and camera. Steel Structure painted (RAL 7022). Steel structure and base painted (RAL 7022). Front and edges steel sheet painted AKZO Nobel Dulux DYY 07/93 (Dark Green)	White RAL 9010, RAL 3020, RAL 7022 & Dark Green



General Site Proposal Notes:

- 'DOT' denotes Department of Transport Signs installed in accordance with all Approved Documents and British Standards. For Signage type refer to AEW drawing no. 13888_AEW_2685_0008
- 'DK' denotes location of drop kerbs to be installed. Drop kerbs to be installed:
- Along delivery routes
 - Around Accessible Parking Bays in accordance with AD M
 - At Pedestrian crossing point

- Yellow Thermoplastic Material to:
- All Drive Thru related road markings
 - Accessible parking bays in accordance with AD M
 - Parked order bays
- White Thermoplastic Material to:
- Car park related road markings to be in white thermoplastic material
 - Standard parking bays to be finished in white thermoplastic material
 - All junction road markings
 - All pedestrian crossings

NOTES

- All dimensions and levels are to be checked on site.
- Any discrepancies are to be reported to the architect before any work commences.
- Whilst information on this sheet is issued to scale, scaling directly from this drawing may result in inaccuracies. For precise measurements, refer to the stated dimensions or contact the Architect.
- This drawing shall not be reproduced without express written permission from AEW.
- Title overlay drawings and ownership boundaries are produced using all reasonable endeavours. 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.

Project Notes

- All drawings to be read in conjunction with all other drawings as noted on issue sheet.
- Drawing based on:
 - Glanville's Survey drawing 4240241-4101A dated: 13/01/2025
 - OS Promap 100022432
 - Glanville's levels drawing 4240241-SK05-P4 Dated: 23/06/25
 - edp9069_0012-C-Detailed Planting Plan
- Existing below ground utilities/services unknown, intrusive surveys required

Application Boundary:

Parking Schedule		
Bay Type	Existing	Proposed
Accessible Bays	0	2
Grill Bays	0	1
General Bays	0	27
EVC Bays	0	2
Total Car Bays	0	32
Cycle Spaces	0	6
Motorcycle Bays	0	2

Schedule of Areas	
Site Area (Hectares)	0.39
Building GEA (m²) (exc. Corral)	309

Site Features Key	
150mm Diameter stainless steel protective bollard	BOL
Cranked bollards Painted Black	CB
Tactile Blister Paving	
Target Bin	
"LP" Denotes Lamppost <i>Refer to LAUK lighting plot for further detail</i>	LP
"LB" Denotes Lighting Bollard <i>Refer to LAUK lighting plot for further detail</i>	LB
Proposed 1800mm high Close Boarded Timber Fence	
Proposed 1100mm high Timber Post & Rail Fence	
Proposed 600mm high Timber Knee Rail Fence	

F	03/09/2025	AK	TSS
Glanville's proposed retaining wall updated, landscape scheme and lighting plot shown, layout updated to suit			
E	29/07/2025	BA	TSS
Site Plan coloured			
D	01/07/2025	AK	TSS
Glanville's proposed retaining wall indicated			
C	20/06/2025	AK	TSS
Application boundary amended, fencing added around housing plot, cycle path and parking amended, recycling unit added to patio			
B	18/06/2025	AK	TSS
Application boundary amended, ADL cycle path shown			
A	13/06/2025	AK	TSS
Totem added whitelining amended, attenuation basin and cycle path indicated			
-	26/03/2025	AK	TSS/LMD
Initial Issue			
REV	Date	Drawn by: -	Checked by: -

For Information

drawing stage: **Planning**

client:

McDonald's Restaurants Ltd

project: **Merthyr Tydfil, Heads of the Valley Rd** store: **2685**

drawing title: **Proposed Site Plan**

date: **26/03/2025** drawn: **AK**
scale@A1: **1:200** checked: **TSS**

G 12/09/2025 AK TSS
edp landscape scheme updated, DT lane equipment schedule shown

Site Plan
Scale 1:200
Proposed Site Plan

Planning

Rev

G

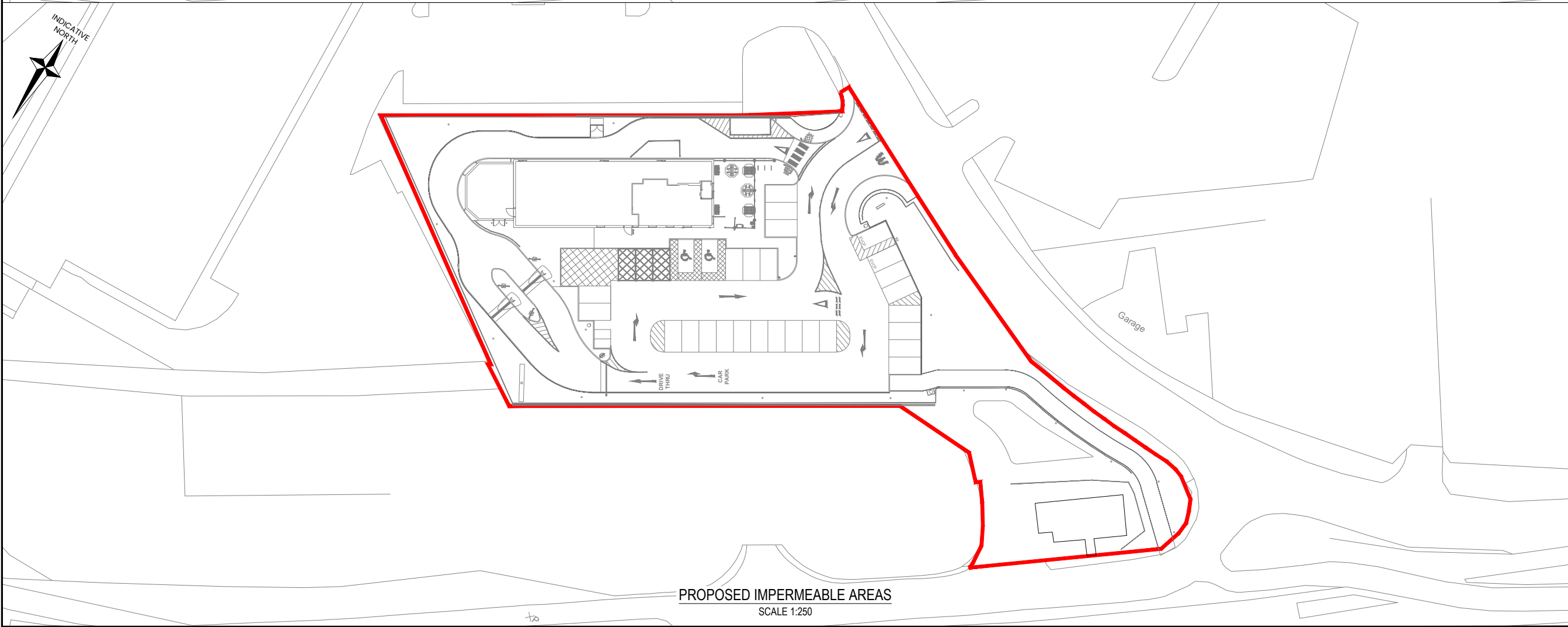
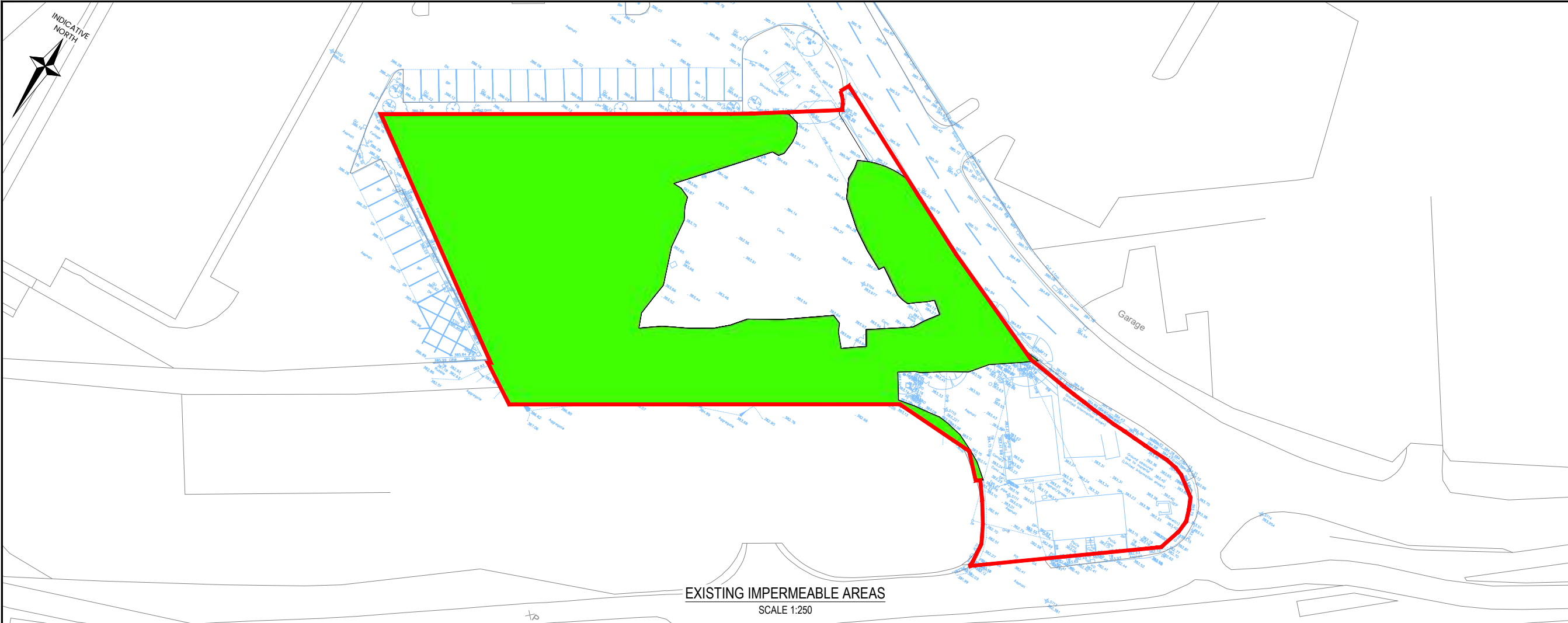
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KEY:

	APPLICATION BOUNDARY
	PROPOSED SITE LAYOUT
	TOPOGRAPHICAL SURVEY
	OS MAP
	EXISTING IMPERMEABLE AREAS AREA = 1668m ²
	EXISTING PERMEABLE AREAS AREA = 2457m ²
	PROPOSED IMPERMEABLE AREAS AREA = 2775m ²
	PROPOSED PERMEABLE AREAS AREA = 1350m ²

FIGURE 4

P2	SITE LAYOUT UPDATED	16.09.25	CDR	JC
P1	FIRST ISSUE	19.06.25	CDR	JC
Rev	Description	Date	By	Chkd

Survey > Plan > Engineer

Civil Engineering

Structural Engineering

Transport Planning

Highways Engineering

Building Surveying

Geomatics

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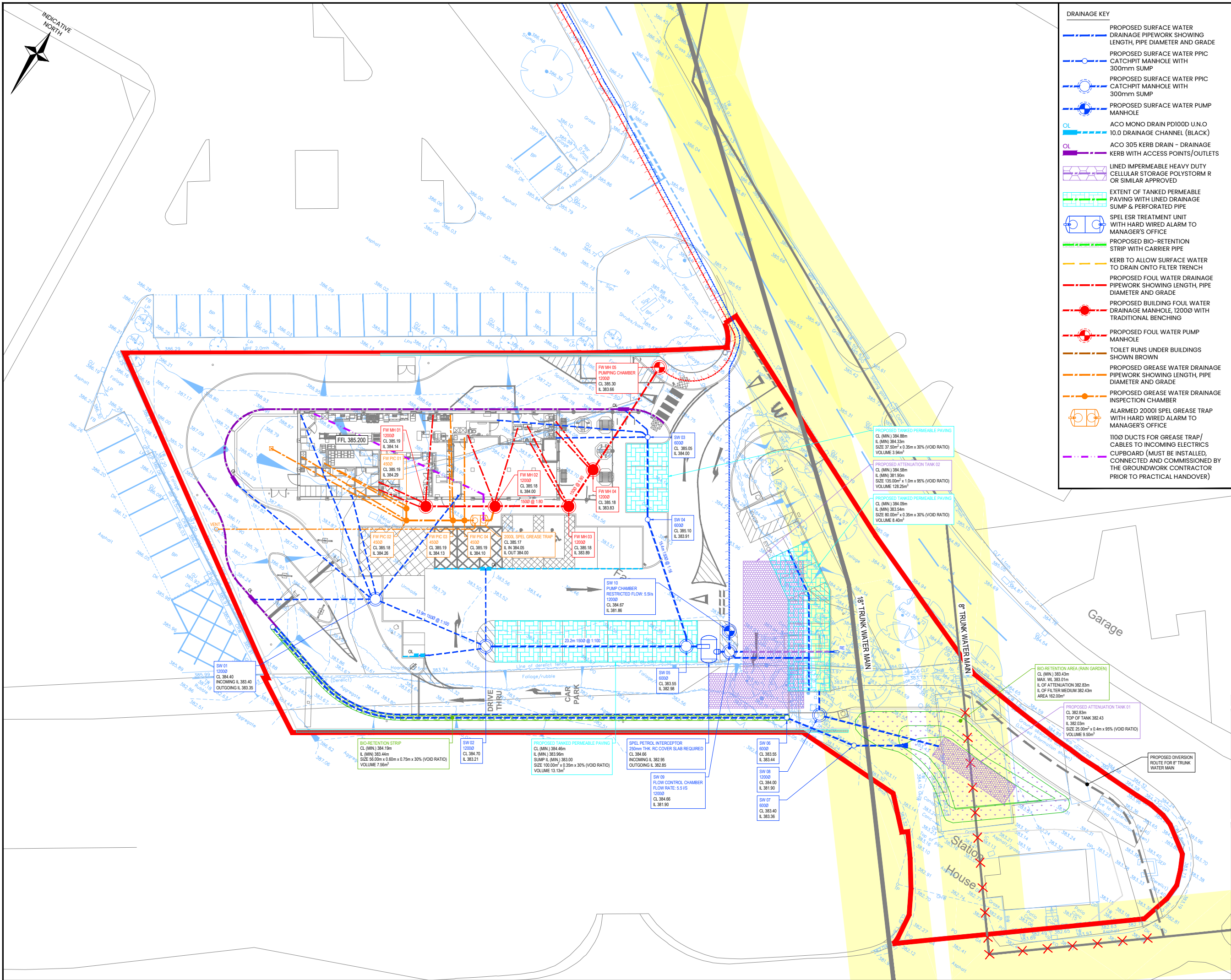
Client:

Project: MCDONALD'S RESTAURANT
HEADS OF VALLEY ROAD, MERTHYR TYDFIL
CF48 2YG (ST2685)

Title: EXISTING AND PROPOSED IMPERMEABLE AREAS

Engineer: CDR	Date: MAY 2025
Director: JC	Scale: 1:250 @ A1
Status: PRELIMINARY	

Drawing No.	4240241-SK03	Rev	P2
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DRAINAGE KEY

- PROPOSED SURFACE WATER DRAINAGE PIPEWORK SHOWING LENGTH, PIPE DIAMETER AND GRADE
- PROPOSED SURFACE WATER PPIC CATCHPIT MANHOLE WITH 300mm SUMP
- PROPOSED SURFACE WATER PPIC CATCHPIT MANHOLE WITH 300mm SUMP
- PROPOSED SURFACE WATER PUMP MANHOLE
- ACO MONO DRAIN PD1000 U.N.O 10.0 DRAINAGE CHANNEL (BLACK)
- ACO 305 KERB DRAIN - DRAINAGE
- KERB WITH ACCESS POINTS/OUTLETS
- LINED IMPERMEABLE HEAVY DUTY CELLULAR STORAGE POLYSTORM R OR SIMILAR APPROVED
- EXTENT OF TANKED PERMEABLE PAVING WITH LINED DRAINAGE SUMP & PERFORATED PIPE
- SPEL ESR TREATMENT UNIT WITH HARD WIRED ALARM TO MANAGER'S OFFICE
- PROPOSED BIO-RETENTION STRIP WITH CARRIER PIPE
- KERB TO ALLOW SURFACE WATER TO DRAIN ONTO FILTER TRENCH
- PROPOSED FOUL WATER DRAINAGE PIPEWORK SHOWING LENGTH, PIPE DIAMETER AND GRADE
- PROPOSED BUILDING FOUL WATER DRAINAGE MANHOLE, 1200Ø WITH TRADITIONAL BENCHING
- PROPOSED FOUL WATER PUMP MANHOLE
- TOILET RUNS UNDER BUILDINGS SHOWN BROWN
- PROPOSED GREASE WATER DRAINAGE PIPEWORK SHOWING LENGTH, PIPE DIAMETER AND GRADE
- PROPOSED GREASE WATER DRAINAGE INSPECTION CHAMBER
- ALARMED 2000I SPEL GREASE TRAP WITH HARD WIRED ALARM TO MANAGER'S OFFICE
- 110Ø DUCTS FOR GREASE TRAP/ CABLES TO INCOMING ELECTRICS CUPBOARD (MUST BE INSTALLED, CONNECTED AND COMMISSIONED BY THE GROUNDWORK CONTRACTOR PRIOR TO PRACTICAL HANDOVER)

- NOTES**
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- DRAINAGE NOTES:**
- ALL DRAINAGE ALARM SYSTEM COVERING SPEL GREASE TRAPS AND TREATMENT UNITS MUST BE INSTALLED, CONNECTED AND COMMISSIONED SPEL PRIOR TO PRACTICAL HANDOVER OF THE STORE TO MCDONALD'S.**
 - ALL DRAINAGE TO BE INSTALLED TO BUILDING REGULATIONS PART H AND/ OR SCOTTISH BUILDING REGULATIONS.
 - ALL DRAINAGE TO BS5852.
 - BUILDING INSPECTOR TO INSPECT ALL FOUL DRAINAGE INSTALLATION

KEY:

- APPLICATION BOUNDARY
- PROPOSED SITE LAYOUT
- TOPOGRAPHICAL SURVEY
- OS MAP
- EXISTING TRUNK WATER MAIN AND EASEMENT

FIGURE 5

P7	SITE LAYOUT UPDATED. WATER MAINS ADDED	16.09.25	CDR	JC
P6	DRAINAGE LAYOUT UPDATED	23.06.25	CDR	JC
P5	ATTENUATION BASIN ADDED AND SW DRAINAGE AMENDED.	22.05.25	CDR	JC
P4	INTERNAL DRAINAGE ADDED	06.05.25	CDR	JC
P3	PROPOSED SITE LAYOUT AMENDED	09.04.25	CDR	JC
P2	FIRST ISSUE	14.02.25	CDR	JC
P1	FIRST ISSUE	28.01.25	JC	HGB

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Survey & Plan & Engineer

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Client: **McDonald's** RESTAURANT

Project: **MCDONALD'S RESTAURANT HEADS OF VALLEY ROAD, MERTHYR TYDFIL CF48 2YG (ST2685)**

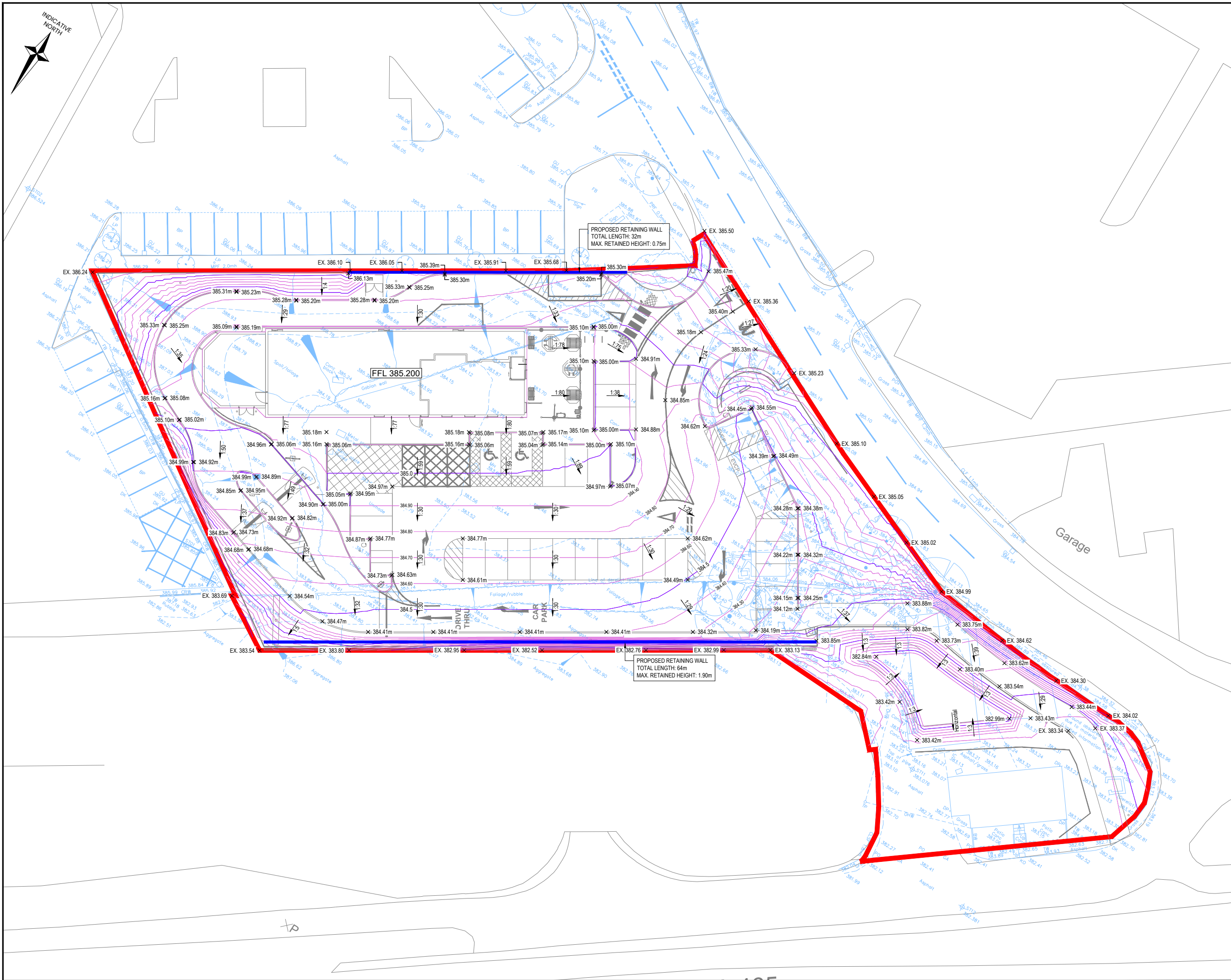
Title: **PROPOSED DRAINAGE LAYOUT**

Engineer: CDR Date: JAN 2025

Director: JC Scale: 1:200 @ A1

Status: PRELIMINARY

Drawing No. 4240241-SK04 Rev P7



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KEY:

- APPLICATION BOUNDARY
- PROPOSED SITE LAYOUT
- TOPOGRAPHICAL SURVEY
- OS MAP
- PROPOSED MAJOR CONTOUR WITH LABELS (0.5m INTERVALS)
- PROPOSED MINOR CONTOUR WITH LABELS (0.1m INTERVALS)
- PROPOSED SLOPE ARROW AND GRADIENT
- PROPOSED SPOT LEVEL
- PROPOSED RETAINING STRUCTURE

FIGURE 6

P5	SITE LAYOUT UPDATED	16.09.25	CDR	JC
P4	ACCESS AMENDED. CYCLEPATH ADDED	23.06.25	CDR	JC
P3	ATTENUATION BASIN ADDED	22.05.25	CDR	JC
P2	SITE LAYOUT UPDATED. LEVELS AMENDED	06.05.25	CDR	JC
P1	FIRST ISSUE	14.02.25	CDR	JC

Rev.	Description	Date	By	Chkd

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Structural Engineering
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Highways Engineering
Building Surveying
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Hertfordshire | Oxfordshire | Cambridgeshire | Bristol

Client:

Project: MCDONALD'S RESTAURANT HEADS OF VALLEY ROAD, MERTHYR TYDFIL CF48 2YG (ST2685)

Title: PROPOSED LEVELS LAYOUT AND EXCEEDANCE ROUTES

Engineer: CDR	Date: FEB 2025
Director: JC	Scale: 1:125 @ A1
Status: PRELIMINARY	

Drawing No. 4240241-SK05	Rev P5
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