



# **DRAINAGE STRATEGY REPORT.**

## **Proposed Residential Development.**

**3-13 Wensley Road,  
Blackburn.  
BB2 1PX.**

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## 1 Introduction.

### Reference:

To support a planning application for a new development comprising of a car repair garage/MOT station.

### ***Blackburn & Darwen Strategic Flood Risk Assessment.***

*Hierarchy & requirements;*

- *Drainage from new developments should incorporate storage, with residual discharge of surface water to the following networks in order of preference:*
  - *Infiltration drainage (e.g. soakaways).*
  - *Discharge to a watercourse.*
  - *Discharge to a public sewer.*
- *New Greenfield development to restrict runoff to existing rates.*
- *New Brownfield development must seek to reduce runoff by at least 50% from existing.*
- *THE SFRA indicates the site is within a critical drainage area (Zone 8 - Blakewater).*

### **Purpose of Report:**

To appraise the existing site and local drainage infrastructure, assess flood risk & the suitability of the proposed development, and to give recommendations for drainage design & management.

The report provides high level recommendations which are to be developed in the detailed working design stage of the development.

### **1.1 Plans.**

#### *1.1.1 Location Plan.*

The Development Site is located within a developed urban setting. Locally the area comprises residential neighbourhoods to the N, and commercial premises to the S.

Neighbouring the site is the former gas works to the SW, a car/vehicle salvage yard to the E & S, and a car park to the Lion Hotel to the W side.

The Blakewater River is approx 100m SE of the site boundary.

Refer to Location Plan. in the Appendix showing the local area features.



### *1.1.2 Site Plan.*

Refer to the Proposed Site Plan in the Appendix.

The site is currently vacant and comprises a surface of made ground/demolition rubble. This extends across the site with a stockpile to the SE corner. The site is surrounded by stone walls to the E & S boundaries.

Historically the site was developed with terraced housing and a small access road (Lawrence Street) to the E side, which appears off old maps to comprise pavements etc and a manhole. It is possible that this remains beneath rubble which has been spread over the site.

The site is relatively level/possibly increasing in level to the rear of the site.

The proposed plan is for a vehicle repair shop/MOT station building to the centre W of the site, with access ramps to the front N side. Site access & on-site parking will be provided to the W side.

## **1.2 Surveys.**

### *1.2.1 Existing and Proposed Topography.*

A topographic survey of the gas works has been undertaken. The surveyors also included the applicant Development Site as well as the surrounding local area.

The data suggests the site is approximately 108.3m aOD to the NW corner, 107.40 to the NE corner, 107.61m aOD to the SW corner, and 107.96 to the SE corner.

A spot level central to the site indicates 108.95m aOD. It is not known whether the levels are current.

## **2 Assessments.**

### **2.1 Existing Surface & Foul Water Systems.**

The existing surface beneath the proposed extension comprises permeable made ground and thus falls under greenfield runoff rates.

There are no above ground structures on the site, however, there may be old basements to the terraces below ground level.

As indicated above, the historic road to the E side of the site may still exist and thus may have an existing manhole and connection in to the public sewer system in Wensley Road. There may still be laterals to the historic housing also.

### **2.2 Proposed Surface Water System.**

The proposed roof area will produce surface water runoff as will the hardstanding areas to be used as the site access & parking.

Ground conditions have been assessed from HR Wallingford Surface Water Storage calculator which estimates class 4 / heavy clay subsoil. Due to the soil type identified it is unlikely the site will be suitable for disposal of surface water via soakaway systems.



The only watercourse is approximately 100m distant from the site, and over multi 3rd party land so this method of surface water disposal is not considered feasible.

Surface water runoff from the proposed roof & hard standing areas will need to be attenuated, with flow restriction and disposal to the local public sewerage system in Wensley Road. This system would comprise either vortex or orifice flow control devices with storage comprising either oversized pipes/manholes or purpose made underground crates. The attenuation design will be required to store water in times of extreme rainfall up to and including the 1:100yr rainfall event (including allowance for climate change).

All SW discharge should be routed through an appropriate oil interceptor prior to discharge from the site.

SW flows will be kept separate from the FW systems.

The site is considered to be greenfield for the purposes of this assessment, however, if the existing road still exists beneath a thin covering of made ground, and is positively drained to the sewerage system, this should be considered as brownfield and calculated accordingly. Due to the size of the proposed total hardstanding area (~720m<sup>2</sup>), the greenfield runoff for the relative area is estimated to be <5l/s for the 1:100yr extreme rainfall event. However due to the potential for blockages within drainage systems, it is generally accepted that a proposed pass forward flow rate of not less than 5l/s is adopted for sites.

An initial assessment of attenuation using the Source Control Surface Water Storage calculator estimated that for an assumed flow rate of 5l/s, between 10m<sup>3</sup> & 21m<sup>3</sup> of attenuation storage would be required.

Refer to appendix for greenfield run-off and attenuation storage calculations.

### ***2.3 Proposed Foul Water System.***

The proposed foul system will be kept separate from the surface water system and only combined at the last manhole before discharge in to the local sewerage system if required.

### ***2.4 Climate Change Impacts.***

A 30% climate change allowance is made for rainfall models in line with EA guidance.

### ***2.5 Recommendations.***

The development has been found to be suitable for a surface water SUDS design utilising attenuation and flow control before discharge in to the public sewer in Wensley Road.

The site is considered greenfield and therefore the pass forward surface water flow rate from the site should be no greater than 5l/s, and should be routed through an oil interceptor before discharge. Should the former road to the E of the site be found to still exist below the made ground covering, this part of the site should be assessed as brownfield.



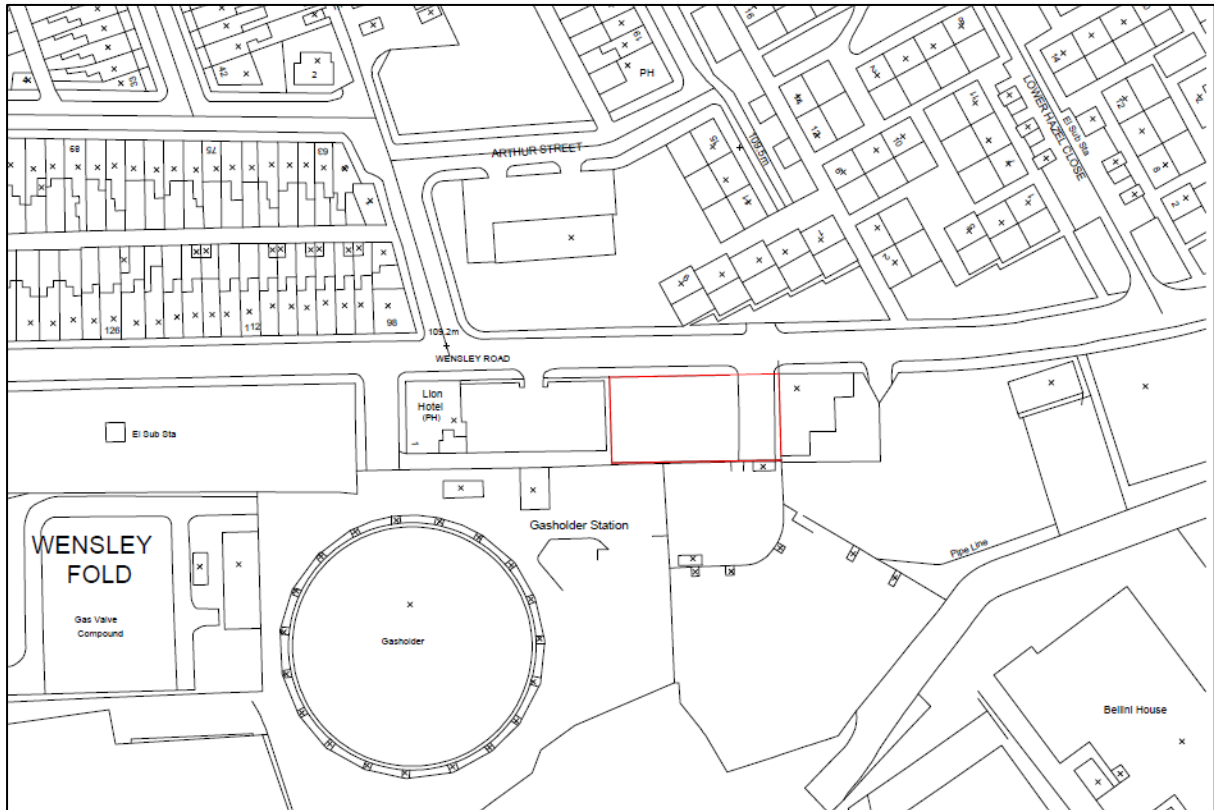
The Source Control Storage Estimator has indicated between 10m<sup>3</sup> & 21m<sup>3</sup> of attenuation will be required as an initial estimate. This will be updated in the detailed design.

The above will be subject to more accurate calculation as part of the UK Building Regulations Approvals and inform the detailed design.

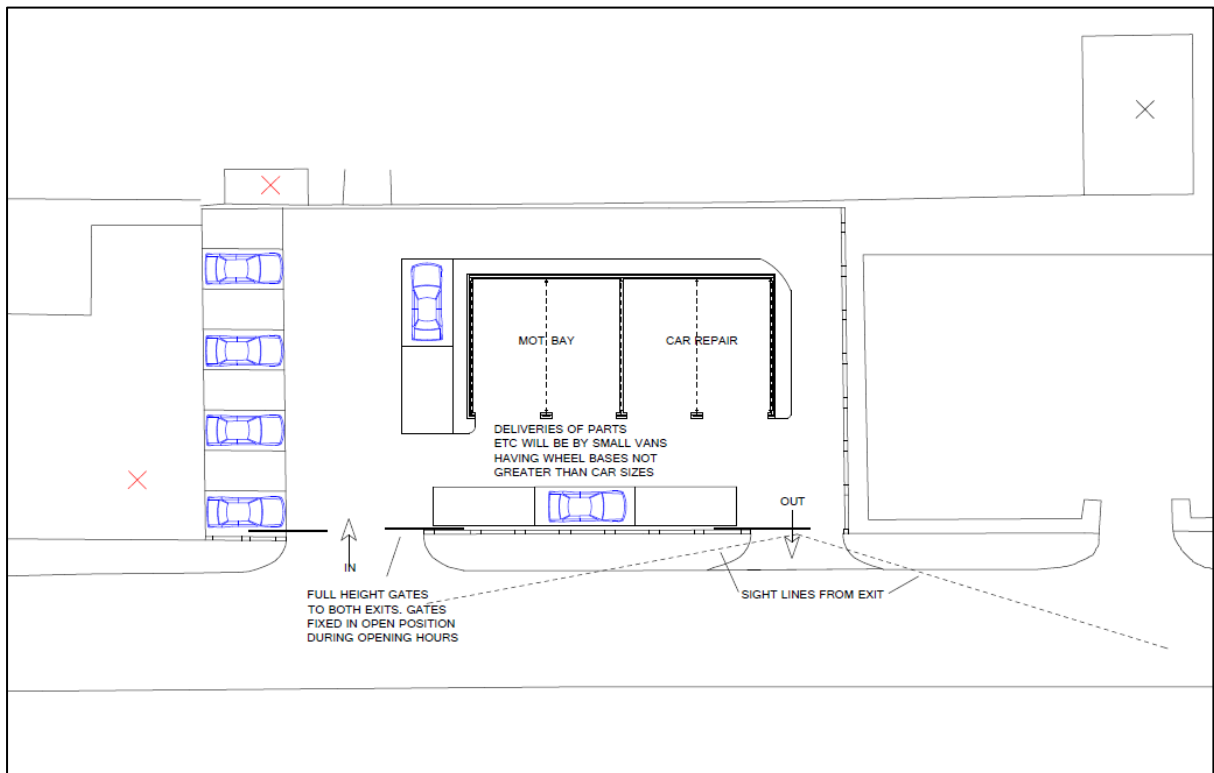


**3 Appendix.**

**3.1 Location Plan.**

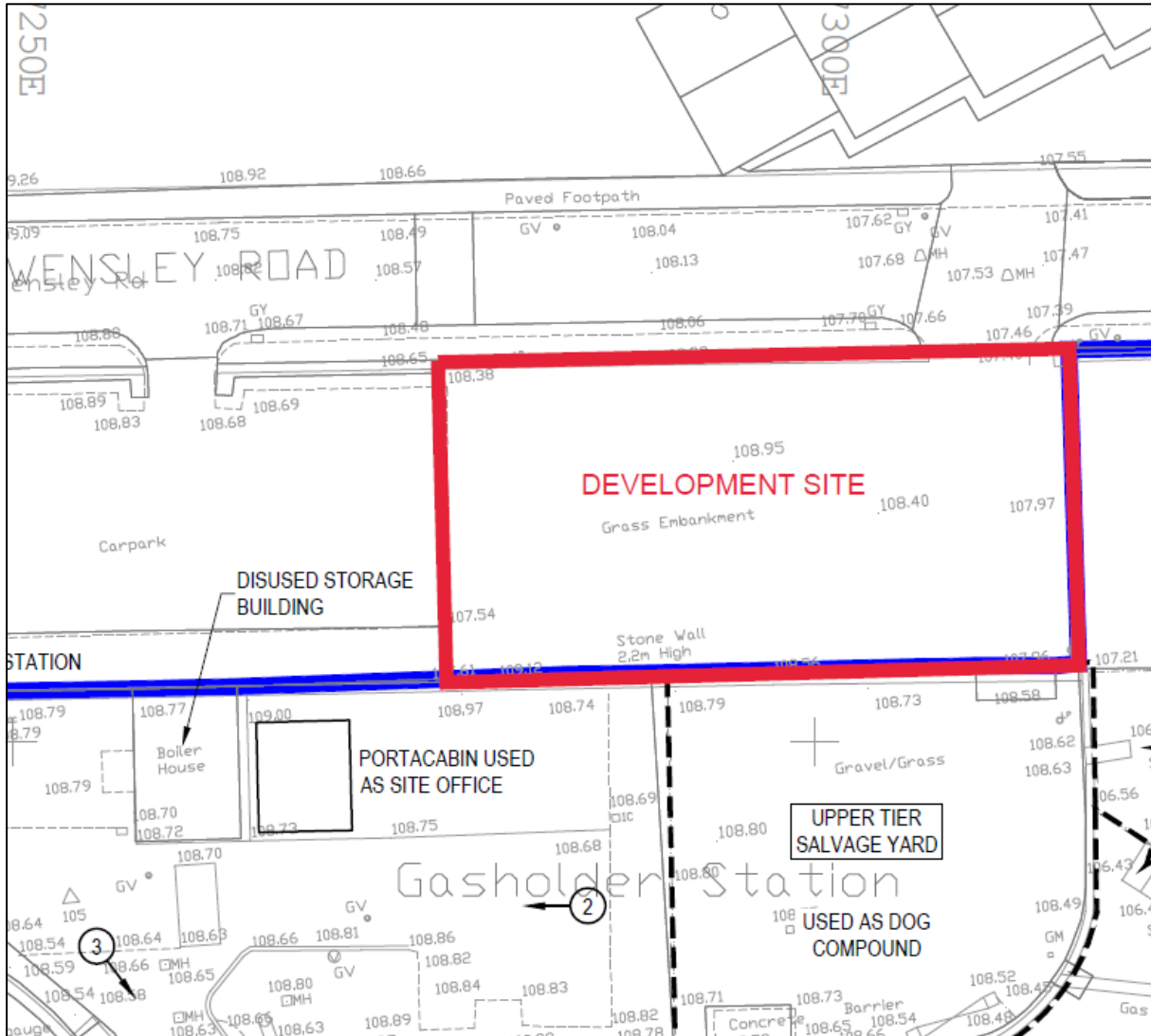


**3.2 Proposed Plan.**





3.3 Topographic Plan.







**3.4 Source Control – Surface Water Storage Estimation.**

Variables	Result	Design	Overview 2D	Overview 3D	Vt	
Region	England & Wales					
Return Period (years)	100					
Map	M5-60 (mm)	20				
	Ratio R	0.3				
					Cv (Summer)	0.750
					Cv (Winter)	0.840
					Impermeable Area (ha)	0.072
					Maximum Allowable Discharge (l/s)	5
					Infil Coefficient (m/hr)	0
					Safety Factor	1.5
Apply						

Variables	Result	Design	Overview 2D	Overview 3D	Vt
<p><b>Global Variables require approximate storage of between 10 m<sup>3</sup> and 21 m<sup>3</sup>.</b></p> <p><b>These values are estimates only and should not be used for design purposes.</b></p>					