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DRAINAGE STRATEGY REPORT.

Proposed Commercial Development.

Land off Argyle Street to the rear of Argyle Parade, Darnhill, Heywood, OL10 3NW.

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Revision:

Revision	Date	Reason
0	July 2018	Original.

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1 Introduction.

Reference:

To address planning condition No.8 on planning permission *17/00812/FUL* for a residential development. Planning condition No.7 states:

> 7 Notwithstanding any detail shown on the approved plans, no development shall take place until a scheme for the discharge of surface water from the site (including surface water from the access and parking areas) has been submitted to and approved in writing by the Local Planning Authority. For the avoidance of doubt, foul and surface water shall be drained on separate systems. The surface water drainage scheme shall be based on the hierarchy of drainage options in the National Planning Practice Guidance, with evidence of an assessment of the site conditions, and shall accord with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards. The duly approved scheme shall be implemented prior to first occupation of the building hereby permitted and retained as such thereafter.

Rochdale & Oldham 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*
- *Development should deliver Greenfield runoff on Greenfield sites up to a 1 in 100 year storm event, considering climate change. Development should aim for a reduction in surface water runoff rates of 30% (50% for critical drainage areas) for Brownfield sites up to a 1 in 100 year storm event, considering climate change. Development should be designed so that there is no flooding to the development in a 1 in 30 year event and so that there is no property flooding in a 1 in 100 year plus climate change event*

Purpose of Report:

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

The report provides high level recommendations and flows for agreements, which are to be developed for construction in the detailed working design stage of the development.

1.1 Plans.

1.1.1 Location Plan.

The Development Site is located on a small plot of public open space to the rear of Argyle Parade in Darn Hill, Heywood to the centre of an existing housing estate. Site coordinates are E: 384049, N: 410204.

The existing LPA highway is located to the E side of the Site with associated sewerage provisions.

The Location Plan in the Appendix shows the red line boundary of the Site to include the above access road, which was included in the boundary at the request of the LPA planners to show access to the Site only. The actual ownership and boundary area which will be subject SUDS is indicated below.

1.1.2 Site Plan.

Refer to the Proposed Plans in the Appendix.

The proposal is for the construction of a boxing club, with surrounding hardstanding/pathway to the perimeter.

As noted above, the Site area subject to development of the Boxing Club and engineering works is shown by the thick edged red line boundary on the Proposed Plan in the Appendix. It is this area only, (500m2), that will be subject to SUDS design and covered in this drainage strategy.

This Site was formerly a community centre, but was demolished between 2005 & 2013. It has since been returned to a greenfield state, and as such will be analysed as a greenfield site for drainage purposes.

Due to the previous use, there may well be some existing drainage infrastructure beneath the Site, such as a piped connection to the existing sewer or manhole.

1.2 Surveys.

1.2.1 Existing and Proposed Topography.

No topographic survey of the Site has yet been undertaken.

There is a slight fall to the SE naturally, however this will likely be levelled on site works.

2 Assessments.

2.1 Existing Surface & Foul Water Systems.

As the Site currently comprises public open space and grassed areas, the Site will be classed as greenfield.

As indicated previously, the Site may have an existing connection to the existing UU sewer which can be reused.

Numerous manholes have been noted around the perimeter of the Site which may form part of the existing Site connection.

2.1.1 Existing Run-off 1:100yr (The Wallingford Procedure)

GREENFIELD RUN-OFF

Attenuation design in accordance with CIRIA publication C753 - The SUDS Manual

Tedds calculation version 1.0.03

Pre post runoff method

Site characteristics

Location	Manchester		
Hydrological region	10	Soil type (W.R.A.P map)	4
Standard percentage runoff mm	SPR = **0.47**	Average annual rainfall	SAAR = **1075**
5yr rainfall of 60min duration	M5_60min = **20.0** mm	Rainfall ratio	r = **0.30**
Global warming rainfall factor	$p_{climate}$ = **30**%		
Routing coefficient	c_r = **1.30**	Volumetric runoff coefficient	c_v = **0.75**

Catchment details

Subcatchment	Name	Area (ha)	PIMP (%)	Impermeable. area (ha)
1	**SITE**	**0.05**	**0.0**	**0.00**
	Total	**0.05**	**0.0**	**0.00**

Greenfield runoff rates

Catchment area	AREA = **50.00** hectare	Greenfield runoff rate (50 ha)	$\cdot Q_{rural}$ = **398.8** l / s
Greenfield runoff rate / hectare	$\cdot Q$ = **0.4** l / s	G'field runoff rate (unit area)	$\cdot Q_A$ = **8.0** l / s

Estimated site discharges

FSR growth rate (1 year)	FSR_{1yr} = **0.87**	Discharge (1 year)	Q_{1yr} = **0.3** l/s
FSR growth rate (30 year)	FSR_{30yr} = **1.70**	Discharge (30 year)	Q_{30yr} = **0.7** l/s
FSR growth rate (100 year)	FSR_{100yr} = **2.08**	Discharge (100 year)	Q_{100yr} = **0.8** l/s

Due to the inherent problems with blockages caused by attempting to restrict flows to less that 5l/s, it is generally accepted that maximum peak flows for Sites should be set to no greater that 5l/s when attenuating up to and including the 1:100yr + climate change rainfall event. This 5l/s peak flow rate allowance will be adopted for the Development Site.

2.2 Proposed Surface & Foul Water Systems.

Following the CIRIA guidance of hierarchy for disposal of surface water (SUDS):

- Ground conditions have been assessed from HR Wallingford Hydrological Data Maps which indicate the Site is within an area of heavy clay cover (soil type 4). Due to the soil type identified the site will be not be suitable for disposal of surface water via soakaway systems.
- There is also no locally available watercourse for discharge of surface water.
- Surface water will therefore have to be discharged to the public sewerage network.

Surface water run-off will be created from the proposed roof area, driveway and hardstandings which in total amount to 500m2. To restrict to a proposed Site peak flow rate of 5l/s, the proposed drainage system will need to comprise attenuation & flow control, with final discharge to the United Utilities public sewer.

This system would comprise either vortex or orifice flow control devices with storage comprising either oversize 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).

An initial assessment of attenuation using the Source Control Surface Water Storage calculator estimated that for an assumed flow rate of 5l/s, between 5.1m^3 & 12m^3 of attenuation storage would be required (refer to appendix for calculation). The amount of storage type of flow control required will be assessed fully in the detailed design.

SW flows will be kept separate from the FW systems.

2.3 Climate Change Impacts.

Climate change allowances to be made in line with current EA guidance on all rainfall events.

3 Recommendations.

The site has been found to be suitable for SUDS with attenuation and flow control systems required for discharge of surface water in to the public sewer.

It would be prudent to obtain plans of sewer assets in the local area from United Utilities.

Likewise, due to the former on-site development, the Site will have benefitted from a connection to the United Utilities sewer network. Although the former building has been demolished, the connection to the existing sewer will likely be live to the Site boundary, and may even comprise a manhole at or within the Site boundaries. It would be prudent to find out if the Site is still connected, and undertake a survey if necessary.

The type of attenuation tank/chamber and flow control device will be identified in the detailed design for construction, however, the peak flow rate from the Proposed Development flow control device must not exceed 5l/s for the 1:100yr+CC event.

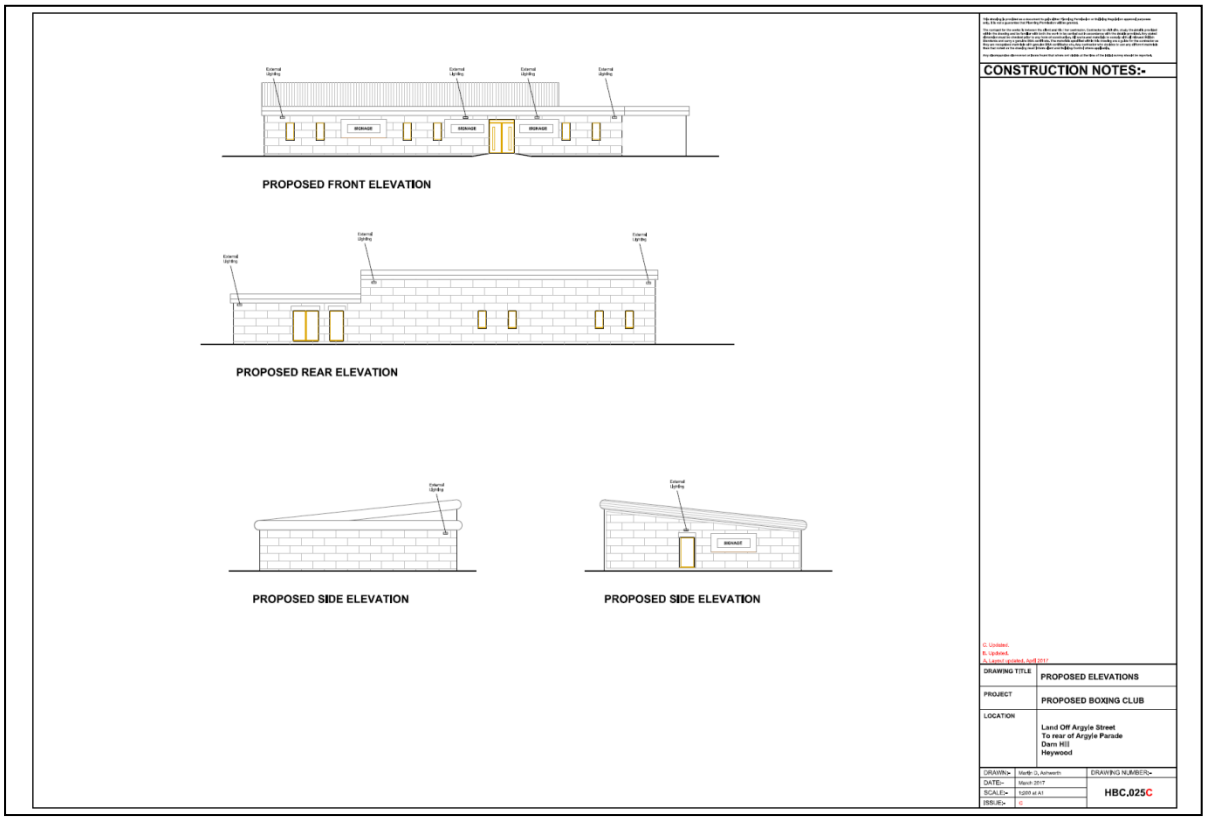
The above will be subject to more accurate calculation as part of the UK Building Regulations Approvals and inform the detailed design.

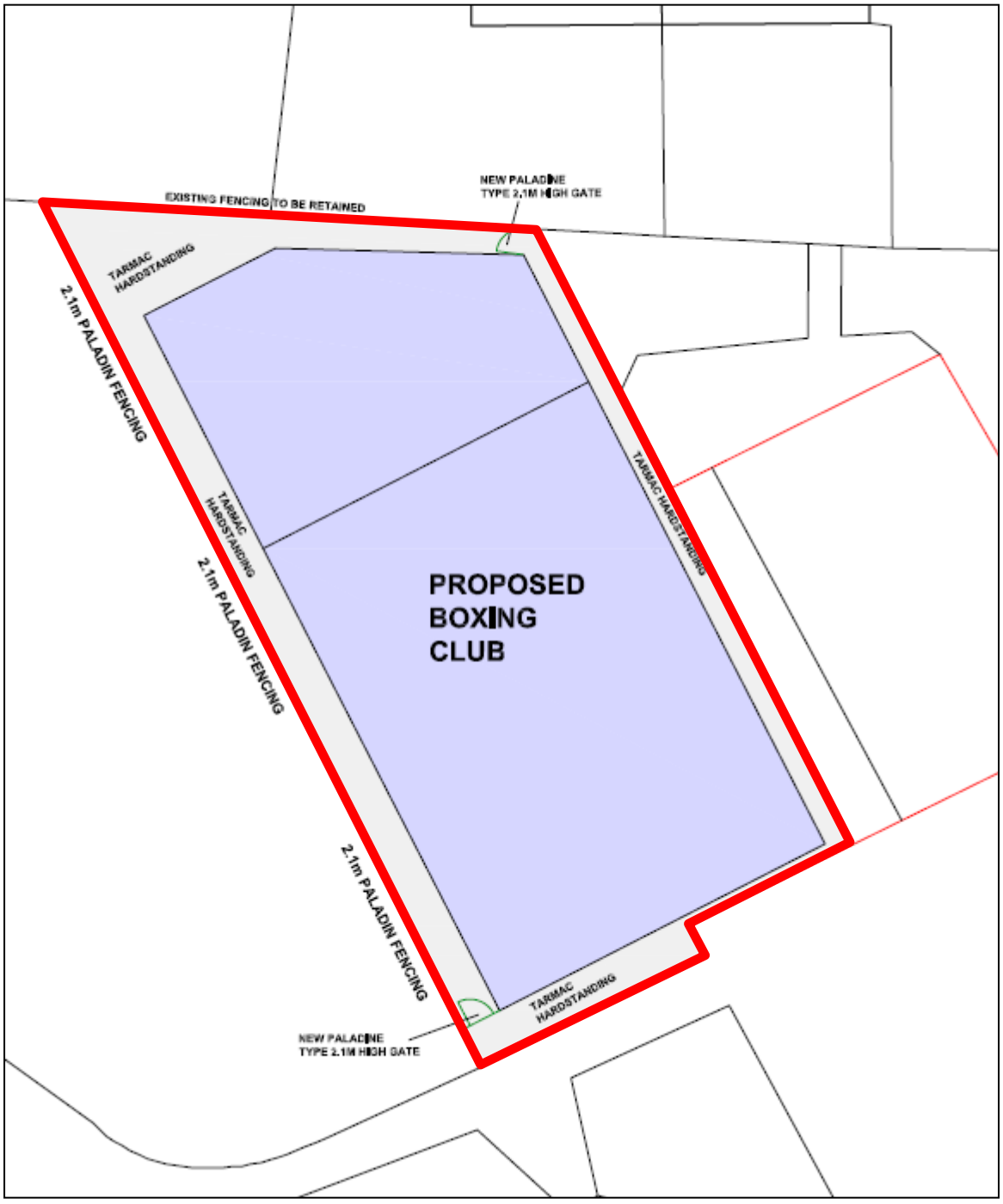
4 Appendix.

4.1 Location Plan.



4.2 Proposed Plans.




EXISTING FENCING TO BE RETAINED
NEW PALADINE TYPE 2.1M HIGH GATE
TARMAC HARDSTANDING
2.1m PALADIN FENCING
TARMAC HARDSTANDING
2.1m PALADIN FENCING
TARMAC HARDSTANDING
PROPOSED BOXING CLUB
2.1m PALADIN FENCING
TARMAC HARDSTANDING
NEW PALADINE TYPE 2.1M HIGH GATE

4.3 Source Control Storage Estimate Calculation.

