

**DRAINAGE STRATEGY REPORT
for
Proposed Car Park Extension
at
Toyota Garage, Llay New Road, Wrexham LL11 4BA**

5 December 2018

Client:

**Drainage Strategy Report for Proposed Car Park Extension to
Toyota Garage, Llay New Road, Wrexham, LL11 4BA**

Document Verification

Project Title	DRAINAGE STRATEGY REPORT for Proposed Car Park Extension at Toyota Garage, Llay New Road, Wrexham LL11 4BA
Project Number	1391
Document Number	1391 DS

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Revision Record

Revision Number	Date	Description	Prepared

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**Drainage Strategy Report for Proposed Car Park Extension to
Toyota Garage, Llay New Road, Wrexham, LL11 4BA**

1.0 Introduction

Appendix 1: Location Plan

- 1.1 Kane Design has been instructed to prepare drainage strategy report for a car parking extension to the Toyota garage owned by Lindop Brothers, at Llay New Road, Bradley, Wrexham LL11 4BA.
Surface water run-off only is being considered.
- 1.2 The copyright of this report is owned by Kane Design. Consequently this report may not be amended or adapted without the approval of Kane Design. Complete copies of this report may, however, be made and distributed by our client in dealing with matters directly related to its commission.

2.0 Existing and Proposed Site Description

**Appendix 2: Proposed Site
Appendix 3: Goggle Earth
Appendix 4: Flood Zone Map**

- 2.1 The proposal is to construct approximately 32 new car parking spaces in the adjacent field to the south.
- 2.2 This field is the low point for a large green-field catchment. It drains via a 300mm diameter culvert under Llay New Road, to the lower fields to the east, which are a designated flood plain.
- 2.3 This field has a short watercourse (8.6m), emerging from a headwall and draining to the culvert. One site visit recorded this as a dry ditch, another visit showed a low, trickle, flow.
- 2.4 The proposed car parking will be at a higher level and retaining will be required. Detailed design, including final levels, retaining wall location and earthworks, are not part of this report.
- 2.5 The site, both existing and proposed, are not within a flood zone.
- 2.6 Although not tested, soakaways are known to be unworkable in this area.

3.0 Drainage issues.

The existing field, to be replaced by the hard-standing car park, has a low area which acts as a flood relief zone should the existing culvert become blocked. This low area will be removed by the construction of the extension.

Although the culvert is amply sized, there have been blockage issues in the past. These were resolved by the culvert owner, Wrexham Council and they have informed me that there has been no know problems for years (exact timescale not known).

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Nevertheless, the possibility of future culvert blockages, and the consequences, needs to be considered. The culvert drains several fields to the west.

The weak link is the culvert, and what happens if it has blockages.

Within reference to this report, and discussions at the meeting with Wrexham drainage, a full flood assessment has not been commissioned. This reflects the small area involved, and proposed usage.

Consequently, the greenfield areas draining to the culvert have not been quantified.

4.0 Drainage Design: See drawing 1391/01 Revision A**Appendix 5**

The following design actions are proposed on the enclosed drawing.

It is proposed to use the existing culvert underneath the road for the drainage to the new extension. All drainage would remain private under garage ownership.

The proposed surface water flow from the new car park, an area of 664m², has an outflow restricted to 5 litre/s to the existing culvert. Oversize storage pipes and a flow control are indicated, although the final means of achieving this are a detailed design item.

Storage has been designed to accommodate the 100 year storm plus 30% climate change, for all storm duration up to six hours.

A land drainage network, with catch pits, is to surround the proposed car park, collecting any run-off, and existing land drainage systems. This is to be discharged to the culvert, but down-pipe from the flow control. Land Drainage is not to mix with the surface run-off storage system.

The next field, further south again, is have low area, approximately equal to the low area lost by the construction of the car park. This field is owned by the same person, as the car-park extension field, and this item is not expected to be a problem. This is the mitigation item requested by Wrexham drainage.

5.0 Information Summary.

The following are included:

Existing greenfield surface water run-off for the site

Proposed storage required

Existing run-off from showrooms (an item requested by Wrexham drainage). See item 6.

Appendix 6**Appendix 7****Appendix 8**

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6.0 Conclusions and Solutions.

The potential problem with constructing this car park in the current field is the consequences of culvert blockage and consequences of water back-up on the surrounding areas.

Proposed works

- The low area of field being removed, is replaced by a zone of similar volume in the adjacent field.
- The proposed flow into the culvert is limited to 5 litre/s
- A land drainage network will collect the run-off from adjacent fields.

Worst case scenario: Total culvert blockage.

- While the existing garage hardstanding area is a relatively high figure, 4037m², in practice almost of this would access the main road via the site entrance. Levels suggest this is happening to an extent, anyway.
- In addition to the proposed low area, there is storage in the proposed large manholes, and gullies. The proposed retaining wall will also keep back some overflow.
- The fields, if overflowing occurs, would drain to the road and hence to the flood plains to the east anyway. No habitable properties would be affected.

A maintenance regime would be agreed for the private storage system which could include visual checking of the Wrexham-owned culvert.

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Appendix 1

LOCATION PLANS





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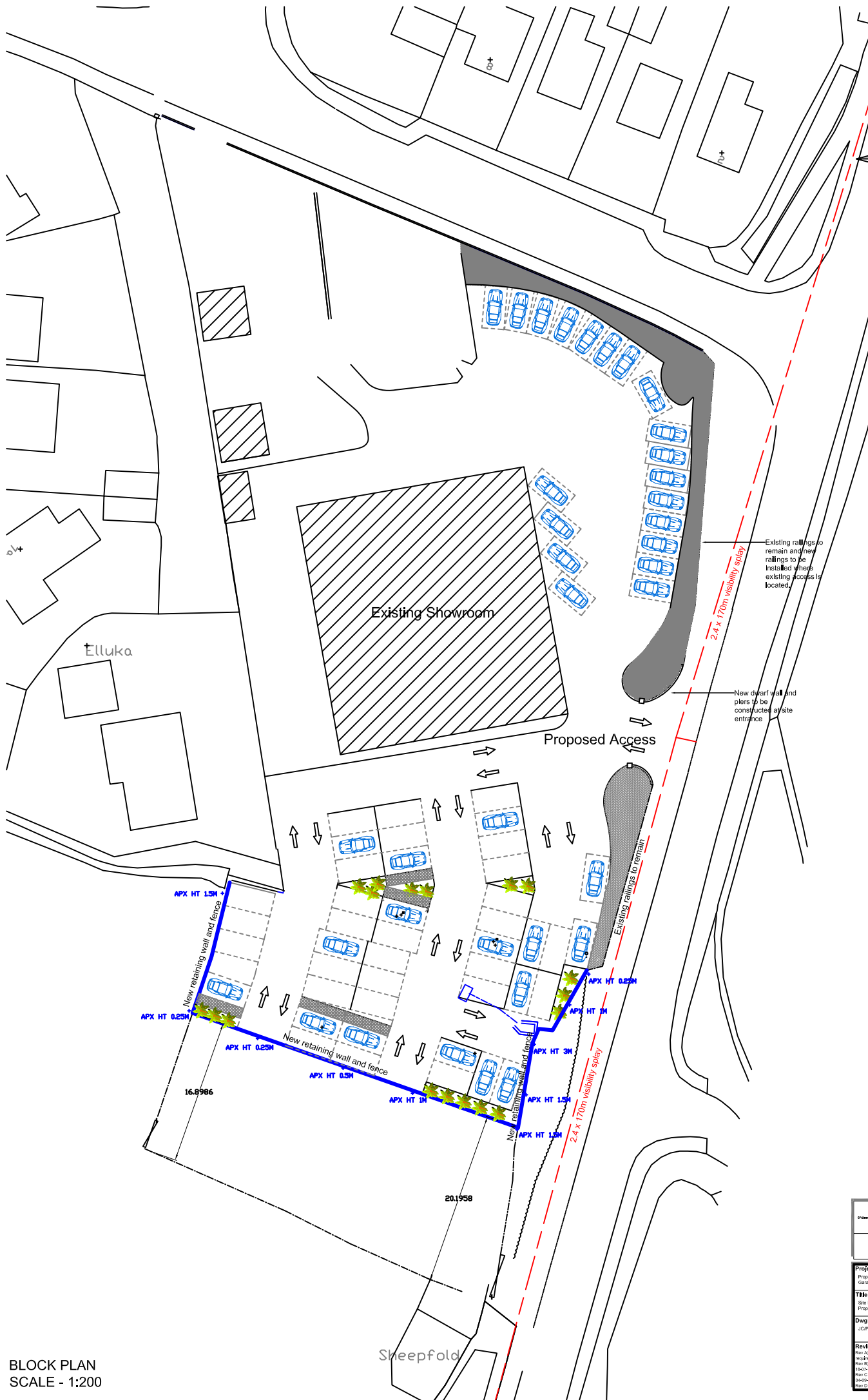
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Appendix 2

PROPOSED LAYOUT





Sheepfold

Owner/Client/Project Name *Design Solutions/JCL*

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 Fensholt Villa, 25 Monksley Road,
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 www.bjwarchitect.co.uk

Project:
 Proposed Car Park Extension to Toyota
 Garage, Llay New Road, Bradley, Wrexham

Title: Site Plan as Proposed	Scale (A1): 1:200
Dwg No: JCP/001	Date: June 2017

Revisions:
 Rev A: Amend parking layout as per client's
 requirements - 28/06/17
 Rev B: Move new wall as per client's requirement
 16/07/17
 Rev C: Add dwarf wall and plans to entrance -
 16/07/17
 Rev D: To facilitate access of residents wall - 12/10/17

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Appendix 3

GOGGLE EARTH

