

TECHNICAL NOTE

Job Name: Aldi, Cables Way, Prescot – Phase 1

Job No: 331810328

Note No: TN001

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Subject: Phase 1 Surface Water and Foul Drainage Hydraulic Calculations

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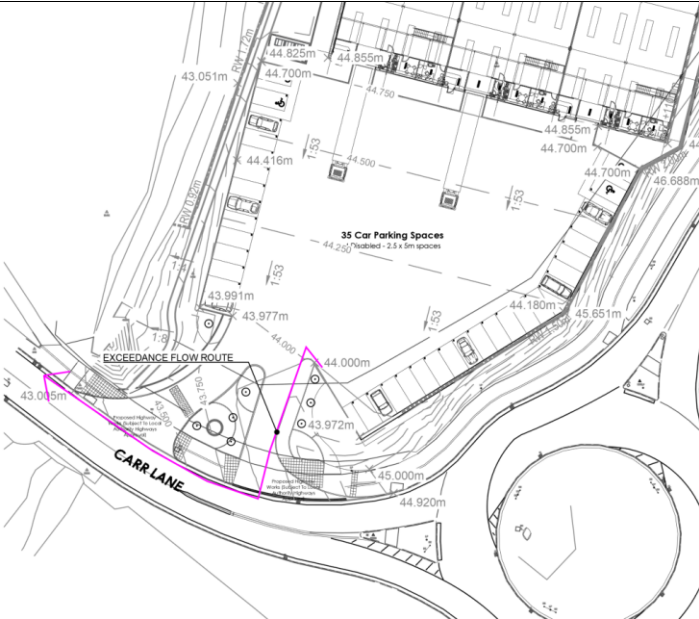
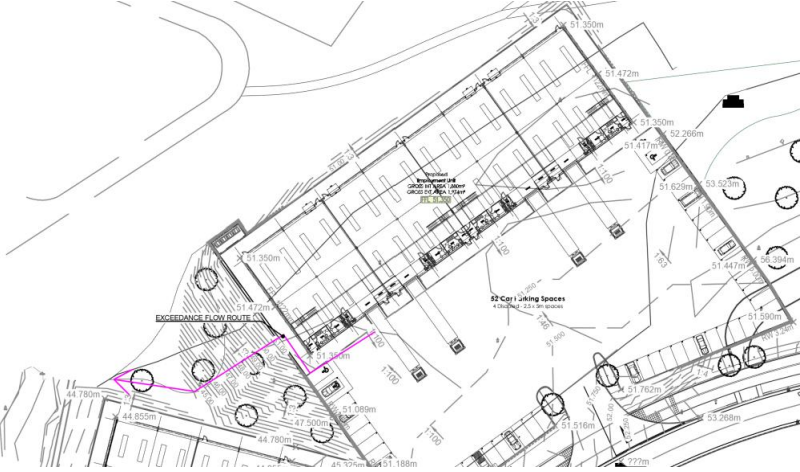
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1.1.	Introduction This technical note has been written in support of the pre-commencement condition 7A for Phase 1 of the Aldi Mixed Use development. This phase consists of 7 No. Employment Units with associated hardstanding and parking areas, split across two separate sites. Unit 2 (northern) site comprises of four employment units, and Unit 1 (southern) site comprises of three employment units. This report has been provided to demonstrate that the proposed surface water for Phase 1 is in accordance with the site wide strategy and contains hydraulic performance details for the proposed surface water drainage scheme. This report should be read in conjunction with the following drainage drawings: 331810328-STN-HDG-ALD-DR-CD-500 Proposed Drainage 331810328-STN-HDG-ALD-DR-CD-501 Manhole and Pipe Schedules This report contains the following Appendices: - Appendix A: 3122-FRA – Flood Risk and Surface Water Drainage Assessment - Appendix B: Surface Water Network details and Hydraulic Calculations: <u>Employment Unit 1 (Southern)</u> 2-year return period 30-year return period (+35% climate change) 100-year return period (+35 climate change) <u>Employment Unit 2 (Northern)</u> 2-year return period 30-year return period (+35% climate change) 100-year return period (+35 climate change) - Appendix C Foul Sewer Calculations

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	The surface water drainage strategy for Phase 1 follows the principles established as part of the Site Wide approved pursuant to Condition 7A of the full planning permission (20/0057). Condition 7A of Application 20/00576/HYBS reads as below: <i>Each phase of the development hereby permitted (as shown on phasing plan reference 1031NESW-140 REV C) shall not commence until a detailed Sustainable Urban Drainage System (SUDS) based drainage scheme, for that phase has been submitted to and approved in writing by the Local Planning Authority. The submitted scheme shall provide suitable drainage drawings, summary calculations, results of all investigations detailing the surface water drainage works as set out below and a timetable for implementation.</i> <i>The maximum rate of discharge, off-site, shall not exceed the QBAR greenfield runoff rate as set out within the Flood Risk and Surface Water Drainage Assessment (reference 3122-FRA, dated February 2020/Job no:3122 by Integra Consulting) dated Feb 2020. The drainage works for each phase (as shown on phasing plan reference 1031NESW-140 REV C) shall be implemented in accordance with the approved details before each phase of the development is first used. Foul and surface water shall be drained on separate systems unless otherwise approved by the Local Planning Authority. The approved drainage scheme shall also be in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards.</i> The approved site-wide drainage strategy is set out in the Flood Risk and Surface Water Drainage Assessment, reference 3122-FRA, prepared by Integra Consulting in February 2020 and can be found in Appendix A. Phase 1 is located the southwestern corner of the wider mixed-use development comprising of 7 No. Employment Units with highway access off Cables Way. The approved Catchment Areas Plan is included within Appendix 6 of the FRA, reproduced in Appendix A of this technical note.
1.3	As noted in the Site Wide Drainage Strategy, the site is currently undeveloped, the flow rates from the development are limited to the equivalent pre-development greenfield runoff rates for all rainfall events up to and including the 1 in 100-year event plus 35% climate change factor. From the Flood Risk Assessment (FRA) (Appendix A), The total QBAR rate for the 3.7414 ha for the entire mixed-used development is 23.77 l/s, for which the proposed QBAR greenfield run-off rate for Phase 1 is 9.6 l/s. The total approved catchment area for Phase 1 is 1.143 ha. However, due to the large level differences between Employment Units 1 (southern) and 2 (northern), two separate surface-water outfalls to Logwood Mill Brook are proposed. The approved Phase 1 catchment area of 1.143 ha is divided as follows: - Unit 1 (southern) with a total catchment area of 0.510 ha, discharging to the southern outfall of Logwood Mill Brook at a restricted rate of 3.24 l/s - Unit 2 (northern) with a total catchment area of 0.633 ha, discharging to the northern outfall of Logwood Mill Brook at a restricted rate of 4.67 l/s For Unit 2 (northern), an FEH-derived QBAR of 4.67 l/s has been adopted in place of the IH124-derived rate of 4.02 l/s. The basis for adopting the FEH methodology is provided in Appendix D. The combined proposed

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	discharge rate for Phase 1 is therefore 7.91 l/s, which remains below the approved Phase 1 QBAR of 9.6 l/s stated in the FRA The flows from both outfalls are controlled via a Hydrobrake prior to discharging into Logwood Mill Brook.
1.4	Surface water flows are conveyed to the existing watercourse using new (gravity) piped network and further sustainable drainage techniques. These are explained below. As part of the development of the site, geocellular attenuation tanks are proposed upstream of each of the outfalls to attenuate surface water flows from the development. - Unit 1's (southern) Geocellular Attenuation Tank provides approximately 282 m³ of attenuation. - Unit 2's (northern) Geocellular Attenuation Tank provides approximately 294 m³ of attenuation. Permeable paving with a porous sub-base is proposed within the parking bays where appropriate. The system provides source control by temporarily storing and conveying runoff, reducing the rate at which surface water enters the downstream drainage network and contributing to the water-quality treatment train. Any storage volume attributed to the porous sub-base has been included within the hydraulic model where applicable. Both outfall invert levels match the adjacent existing culverts' invert levels as shown on the SEP Drainage Survey dated December 2017 which can be found in Appendix E. Parts of the proposed outfall pipelines are located within a United Utilities easement. The Developer shall therefore engage with United Utilities and obtain the necessary approval for construction within the easement before commencing the affected works. A Flood Risk Activity Permit (FRAP) shall be obtained from the Environment Agency before construction of the outfall and any associated regulated works commences. The permit is required to ensure that the proposed works do not adversely affect flood flows, the watercourse or flood-risk management activities. The hydraulic modelling indicates that no surface-water flooding leaves the Phase 1 site during the 1-in-100-year event, including the applicable climate-change allowance. Any exceedance flows from Unit 1 (southern) are directed towards Carrs Lane and conveyed northwards along the main carriageway. Exceedance flow route is shown on the sketch below.

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	 Any exceedance flows from Unit 2 (northern) are directed towards the south-western corner of the building, adjacent to the retaining wall, before passing through the proposed landscaped area and ultimately discharging to the existing watercourse. Exceedance flow route is shown on the sketch below. 
1.5	<u>Phase 2</u> It is anticipated that Phase 2 will be discharging into Logwood Mill Brook as shown on drawing 331810328-STN-HDG-ALD-DR-CD-500. However, if deemed unsuitable, there is also an option to connect into the existing surface water sewer along the main carriageway of Cables Way. This would be subject to approval from United Utilities. <u>Phase 3</u>

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	Due to the large distance between Phase 3 to the Logwood Mill Brook, discharge to the watercourse is not currently considered practicable. It is therefore recommended that Phase 3 connects to the existing surface-water sewer within Cables Way, subject to capacity confirmation and approval from United Utilities.
2.1	The proposed on-site foul water drainage strategy is shown on Stantec drawing 331810328-STN-HDG-ALD-DR-CD-500, a copy of which is included as part of this Discharge Condition Application. As can be seen from the drawing, the Employment Unit 1's on-site foul drainage network will drain by gravity and connect to the existing foul water network at the southwestern corner of Employment Unit 1 of the site. Employment Unit 2's on-site foul drainage network will drain by gravity and connect to the existing foul water network just outside of Phase 1's boundary at the northeastern corner, but within Phase 2's approved boundary. A pre-development enquiry has been submitted to United Utilities. The appointed Developer shall engage with United Utilities to agree the proposed foul-water connection points and obtain the necessary sewer connection approvals before construction The hydraulic calculations are provided in Appendix C.