Argosy Drive, Manchester Airport

TECHNICAL NOTE

Response to LLFA Comments

DOCUMENT CONTROL SHEET

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Project: Argosy Drive, Manchester Airport

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Introduction

The following technical note has been prepared by Burrows Graham Limited on behalf of their client Columbia Threadneedle in response to the LLFA comments received in relation to the condition 4 submission for application reference 134103/FO/2022.

LLFA Comment	Burrows Graham Response
Consideration of alternative green SuDS solution (that is either utilising infiltration or attenuation) if practicable. Please provide evidence of progression through the drainage hierarchy.	The SuDS hierarchy has been assessed in the original drainage strategy. The phase 2 Tetra Tech site investigation carried out in 2022 concludes that the site is underlain by made ground and clay, therefore infiltration is not viable. As such this has been discounted. In line with the hierarchy, the next suitable method of discharge is to a watercourse/waterbody. There are no available watercourses within proximity to the site and therefore this has been discounted. In line with the hierarchy the next suitable option is to discharge to a surface water sewer. Given the proximity of surface water sewers this is the option that has been proposed.
Details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Critical Drainage Area; Details including a cross section of storage pipes and retention separator to be provided.	The storage system and retention separator are both contractor led design. As such, it is not possible to provide specific manufacturers proposals. However, please see attached proposed details which are subject to change.
An existing and proposed impermeable areas drawing to accompany all discharge rate calculations.	The AECOM Flood Risk Assessment and Drainage Strategy ref. 60663052-ACM-ArA-XX-RP-C-00002 dated April 2022 has the proposed and existing catchment plans that show how the overall discharge rate to the non-containment system of 111l/s has been calculated.
Runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is reasonable practicable to the greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment; Greenfield runoff rate calculation has not been submitted, it is not clear how the proposed restricted discharge rate of 54.7 l/s has been calculated.	As noted above the discharge from the wider site to the non-containment system is restricted to 111 l/s, the proposed catchment area for this discharge rate was 2.72 Ha. The rate of 54.7 l/s reflects the corresponding equivalent rate for the impermeable area associated with this application.
Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as	See hydraulic calculations attached. The approved FRA includes the allowance for 40% climate change which has been applied to this application.

part of the design) so that flooding does not occur during a 1 in 100 year rainfall event with allowance for 45% climate change in any part of a building. See below hydraulic calculations clause.	
Assessment of overland flow routes for extreme events that is diverted away from buildings (including basements). Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site	See attached plan.
Results of ground investigation carried out under Building Research Establishment Digest 365. Site investigations should be undertaken in locations and at proposed depths of the proposed infiltration devices. Proposal of the attenuation that is achieving half emptying time within 24 hours. If no ground investigations are possible or infiltration is not feasible on site, evidence of alternative surface water disposal routes (as follows) is required.	As noted above, as concluded in the Tetra Tech phase 2 site investigation carried out in 2022 the site is unsuitable for infiltration based on the presence of made ground and clay. As such no infiltration testing has been carried out.
Where surface water is connected to an offsite private drainage network, agreement in principle from the asset owner (MAG) is required that there is adequate spare capacity in the existing system taking future development requirements into account. An email of acceptance of proposed flows and/or new connection will suffice.	The AECOM Flood Risk Assessment and Drainage Strategy ref. 60663052-ACM-ArA-XX-RP-C-00002 dated April 2022 sets out the existing drainage strategy which follows the same principles. MAG are aware of the scheme and have raised no such objections to these flow rates or proposals.
For sites where proposed development would cause unusual pollution risk to surface water evidence of pollution control measures (preferably through SuDS) is required	In line with table 26.2 of CIRIA guidelines the site is classified as medium risk as indicated below.

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TABLE 26.2 Pollution hazard indices for different land use classifications
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<tr><th>Land use</th><th>Pollution hazard level</th><th>Total suspended solids (TSS)</th><th>Metals</th><th>Hydro-carbons</th></tr>
<tr><td>Residential roofs</td><td>Very low</td><td>0.2</td><td>0.2</td><td>0.05</td></tr>
<tr><td>Other roofs (typically commercial/ industrial roofs)</td><td>Low</td><td>0.3</td><td>0.2 (up to 0.8 where there is potential for metals to leach from the roof)</td><td>0.05</td></tr>
<tr><td>Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day</td><td>Low</td><td>0.5</td><td>0.4</td><td>0.4</td></tr>
<tr><td>Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]</td><td>Medium</td><td>0.7</td><td>0.6</td><td>0.7</td></tr>
<tr><td>Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]</td><td>High</td><td>0.8[2]</td><td>0.8[2]</td><td>0.9[2]</td></tr>
</table>

Given the site is entirely impermeable surfacing with limited space for above ground SuDS it is proposed to provide this treatment in the form of a full retention separator from Spel's ESR range which provides the required mitigation and is approved by waterbodies. A copy of their certification is attached.
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<td>Hydraulic calculation of the proposed drainage system.
Please provide hydraulic calculations of the proposed drainage system, including all design parameters. Calculations must Include Critical Storm Events for the 1 in 2, 1 in 30 and 1 in 100 + 45% Climate Change. Results must demonstrate no surcharge for the 1 in 2, no flooding in the 1 in 30 and no flooding of buildings for the 1 in 100 + 45% Climate Change.</td>
<td>See hydraulic calculations attached. The approved FRA includes the allowance for 40% climate change which has been applied to this application.</td>
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<td>Construction details of flow control and SuDS elements</td>
<td>See attached flow control information.</td>
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Based on the commentary provided above, we believe that sufficient information has been provided to enable the condition to be discharged.