

Land Use Planning & Transportation

13 OCT 2021

South Dubiin County Council

South Dublin County Council  
County Hall Tallaght  
Dublin 24

PI Ref. SD21A/0051  
Our Ref: 17573 /RC/RH

4<sup>th</sup> September 2021

**Re: Proposed Continuance of use of the 3 existing buildings and associated areas, RGR Holdings Limited: Wilsons Auctions, Green Isle Road, Corkage Dublin 22.**

Dear Sir/ Madam

Further to your request for further information dated 27<sup>th</sup> April 2021 I set down below my response to query No.6 and Query No.7.

This submission was prepared in consultation with Applicant, RGR Holdings Ltd., Landscape Architect, Kevin Fitzpatrick and Planning and Development Consultants, BMA Planning.

This response is supported by the following drawings:-

- 4996-02-P30 Rev1 : Natural flow path and Drainage system
- 4996-02-P1000 Rev1 : Site Plan/ Signage
- 4996-02-P1001 Rev 1 : Existing Signage
- 4996-02-P05- Ground Floor Plan

**Query No.6:-**

6. The applicant should note that based on the limited information provided, the surface water attenuation provided of 255m<sup>3</sup> for 1:30 year is estimated to be undersized by approximately 255%. The surface water attenuation of 407m<sup>3</sup> provided for 1 in 100 year storm is estimated to be undersized by approximately 60%. Both of which are considered to be unacceptable and contrary to the provisions of the County Development Plan. The applicant is requested to submit the following:
  - (a) A report showing Met Eireann rainfall data for the proposed site. This should show what the SAAR (Standard Annual Average Rainfall) being used is.
  - (b) A report showing updated surface water attenuation calculations. This shall show what surface water attenuation is provided and what surface water attenuation is required
  - (c) A report and revised plan proposals showing what SuDS (Sustainable Drainage System) are proposed for the development.
  - (d) A revised surface water/SuDS plan and method statement that introduces significant SuDS elements to the overall design, which should include the greening of all infrastructure on the site. Please note that over-engineered solutions will not be looked upon favourably and that SuDS features such as tree pits, green area detention basins, swales, green roofs, permeable paving rain gardens, channel rills and other such SuDS should be included within the revised proposals.
  - (e) The applicant shall show what the surface water attenuation capacity in m<sup>3</sup> is for such SuDS.
  - (f) The applicant shall submit a revised drawing showing what surface water attenuation is proposed for the development. Include SuDS in surface water attenuation provided. Show what the capacity is for each surface water attenuation system is for the site.
  - (g) When showing surface water layout of development, the applicant shall use the colour coding of the Greater Dublin Strategic Drainage Study for showing surface water network on drawing.
  - (h) A report to show what, if any, flood risk there is for proposed development (both on the site and downstream from the site).

**Response:-**

**A)** The rainfall data used was based on Met Eireann Data for the Dublin area.

Met Eireann  
Return Period Rainfall Depths for sliding Durations  
Irish Grid: Easting: 305388, Northing: 229448.

DURATION	Interval	Years														
		6months, 1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.4, 3.5,	4.2,	5.2,	5.9,	6.4,	8.2,	10.3,	11.7,	13.8,	15.6,	17.1,	19.4,	21.2,	22.7,	N/A	
10 mins	3.3, 4.9,	5.8,	7.2,	8.2,	8.9,	11.4,	14.4,	16.4,	19.2,	21.8,	23.8,	27.0,	29.5,	31.6,	N/A	
15 mins	3.9, 5.8,	6.9,	8.5,	9.6,	10.5,	13.4,	16.9,	19.2,	22.6,	25.6,	28.0,	31.8,	34.7,	37.2,	N/A	
30 mins	5.1, 7.6,	8.9,	10.9,	12.4,	13.5,	17.2,	21.5,	24.4,	28.5,	32.3,	35.2,	39.8,	43.4,	46.4,	N/A	
1 hours	6.7, 9.8,	11.5,	14.1,	15.9,	17.3,	21.9,	27.3,	30.9,	36.0,	40.6,	44.2,	49.9,	54.3,	57.9,	N/A	
2 hours	8.9, 12.8,	15.0,	18.2,	20.5,	22.2,	28.0,	34.7,	39.1,	45.5,	51.1,	55.6,	62.4,	67.8,	72.3,	N/A	
3 hours	10.4, 14.9,	17.4,	21.2,	23.7,	25.7,	32.3,	39.9,	44.9,	52.1,	58.5,	63.5,	71.2,	77.3,	82.3,	N/A	
4 hours	11.6, 16.7,	19.4,	23.5,	26.3,	28.5,	35.8,	44.1,	49.6,	57.4,	64.4,	69.8,	78.2,	84.8,	90.3,	N/A	
6 hours	13.7, 19.4,	22.6,	27.3,	30.5,	33.0,	41.3,	50.7,	56.9,	65.8,	73.6,	79.8,	89.2,	96.6,	102.8,	N/A	
9 hours	16.0, 22.7,	26.3,	31.7,	35.4,	38.3,	47.6,	58.3,	65.4,	75.4,	84.2,	91.1,	101.8,	110.1,	117.0,	N/A	
12 hours	17.9, 25.3,	29.3,	35.3,	39.3,	42.4,	52.7,	64.4,	72.1,	83.0,	92.7,	100.2,	111.8,	120.8,	128.3,	N/A	
18 hours	21.0, 29.5,	34.1,	40.9,	45.6,	49.1,	60.9,	74.1,	82.8,	95.1,	106.0,	114.5,	127.5,	137.6,	146.0,	N/A	
24 hours	23.6, 33.0,	38.0,	45.5,	50.6,	54.5,	67.4,	81.8,	91.4,	104.8,	116.7,	125.9,	140.0,	151.0,	160.1,	191.9,	
2 days	29.6, 40.3,	45.9,	54.1,	59.6,	63.9,	77.5,	92.7,	102.5,	116.2,	128.2,	137.5,	151.6,	162.4,	171.3,	202.3,	
3 days	34.5, 46.2,	52.2,	61.1,	67.0,	71.5,	85.8,	101.6,	111.8,	125.9,	138.2,	147.6,	161.8,	172.8,	181.7,	212.6,	
4 days	38.8, 51.3,	57.8,	67.2,	73.3,	78.0,	93.0,	109.4,	119.9,	134.4,	146.9,	156.5,	171.0,	182.1,	191.1,	222.2,	
6 days	46.4, 60.3,	67.4,	77.6,	84.3,	89.4,	105.5,	122.9,	134.0,	149.1,	162.2,	172.1,	187.1,	198.4,	207.7,	239.4,	
8 days	53.1, 68.2,	75.8,	86.8,	94.0,	99.4,	116.4,	134.6,	146.2,	161.9,	175.5,	185.7,	201.1,	212.8,	222.3,	254.5,	
10 days	59.2, 75.4,	83.5,	95.1,	102.7,	108.4,	126.2,	145.2,	157.2,	173.5,	187.4,	198.0,	213.8,	225.7,	235.4,	268.2,	
12 days	64.9, 82.1,	90.7,	102.9,	110.7,	116.7,	135.2,	154.9,	167.3,	184.1,	198.4,	209.2,	225.4,	237.6,	247.5,	280.9,	
16 days	75.6, 94.5,	103.8,	117.0,	125.5,	131.9,	151.7,	172.7,	185.8,	203.4,	218.4,	229.7,	246.5,	259.2,	269.4,	303.8,	
20 days	85.5, 105.8,	115.8,	129.9,	139.0,	145.8,	166.7,	188.7,	202.4,	220.8,	236.5,	248.2,	265.6,	278.6,	289.2,	324.5,	
25 days	97.0, 119.1,	129.8,	144.9,	154.5,	161.8,	184.0,	207.2,	221.6,	240.8,	257.1,	269.2,	287.3,	300.8,	311.7,	348.1,	

**NOTES:**

N/A Data not available

These values are derived from a Depth Duration Frequency (DDF) Model

For details refer to:

\*Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin\*

Available for download at [www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies\\_TN61.pdf](http://www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf)

Standard Average Annual Rainfall (SAAR) =754mm.

**B)** The surface water from hard standing area is collected by gulley's and roof water is collected by gutters and discharges to three No. rainwater harvesting storage tanks. This grey water is fed back to the building and the excess water overflows from the storage tanks to a proposed silt trap and petrol/oil interceptor before discharging into Attenuation storm water management system (StormTech) with an out fall to the stream.

The areas contributing are:-

- a) Roof 6,105 sqm
- b) Pavement 10,365 sqm

The Green Area (8,888sqm) is located to the rear of the buildings and surface water naturally flows towards the river. The gravel hard standing (6,835sqm) is a permeable area.

The rational method is used to determine peak runoff discharge for return periods of 5, 10, 20, 50 & 100 years with rainfall intensities obtained from the Meteorological Office. The impermeable area which includes roads, & paving is estimated to be 16,470m<sup>2</sup>. The coefficient for the impervious area was 0.8. The allowable discharge for this scheme is 2 l/s which is deducted from the net flow from the site.

The *Surface water Attenuation required* for the site for a return period of 30 years is 789m<sup>3</sup>. The volume of storage required for the site for a return period of 100 years is 1,118m<sup>3</sup>.

Calculations are set down below:

IMPERMEABILITY FACTOR = 0.8 Roof & Paved Area = 16470	IMPERMEABILITY FACTOR = 0.1 Green Area= 0
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**RETURN PERIOD 100year**

Duration (mins)	Intensity (mm/hr)	Existing flow (L/s)	New flow (L/s)	Flow to storage (L/s)	Storage (M <sup>3</sup> )
15	112	2.0	512.81	510.81	460
30	70.4	2.0	322.34	320.34	577
60	44.2	2.0	202.38	200.38	721
120	27.8	2.0	127.29	125.29	902
180	21.2	2.0	97.07	95.07	1027
240	17.4	2.0	79.67	77.67	1118
360	13.3	2.0	60.90	58.90	1272
540	10.2	2.0	46.70	44.70	1448
720	8.3	2.0	38.00	36.00	1555

**RETURN PERIOD 50year**

Duration	Intensity	Existing flow	New flow	Flow to storage	Storage
(mins)	(mm/hr)	(L/s)	(L/s)	(L/s)	(M <sup>3</sup> )
15	90.4	2.0	413.91	411.91	371
30	57	2.0	260.98	258.98	466
60	36	2.0	164.83	162.83	586
120	22.7	2.0	103.94	101.94	734
180	17.4	2.0	79.67	77.67	839
240	14.3	2.0	65.47	63.47	914
360	11	2.0	50.37	48.37	1045
540	8.4	2.0	38.46	36.46	1181
720	6.9	2.0	31.59	29.59	1278

**RETURN PERIOD 30year**

Duration	Intensity	Existing flow	New flow	Flow to storage	Storage
(mins)	(mm/hr)	(L/s)	(L/s)	(L/s)	(M <sup>3</sup> )
15	76.8	2.0	351.64	349.64	315
30	48.8	2.0	223.44	221.44	399
60	30.9	2.0	141.48	139.48	502
120	20	2.0	91.57	89.57	645
180	15	2.0	68.68	66.68	720
240	12.4	2.0	56.78	54.78	789
360	9.5	2.0	43.50	41.50	896
540	7.3	2.0	33.42	31.42	1018
720	6	2.0	27.47	25.47	1100

**RETURN PERIOD 20year**

Duration	Intensity	Existing flow	New flow	Flow to storage	Storage
(mins)	(mm/hr)	(L/s)	(L/s)	(L/s)	(M <sup>3</sup> )
5	123.6	2.0	565.92	563.92	169
10	86.4	2.0	395.60	393.60	236
15	67.6	2.0	309.52	307.52	277
30	43	2.0	196.88	194.88	351
60	27.3	2.0	125.00	123.00	443
120	18.7	2.0	85.62	83.62	602
180	13.3	2.0	60.90	58.90	636
240	11	2.0	50.37	48.37	696
360	8.5	2.0	38.92	36.92	797
540	6.5	2.0	29.76	27.76	899
720	5.4	2.0	24.72	22.72	982

**RETURN PERIOD 10year**

<b>Duration</b>	<b>Intensity</b>	<b>Existing flow</b>	<b>New flow</b>	<b>Flow to storage</b>	<b>Storage</b>
(mins)	(mm/hr)	(L/s)	(L/s)	(L/s)	(M <sup>3</sup> )
5	98.4	2.0	450.54	448.54	135
10	68.4	2.0	313.18	311.18	187
15	53.6	2.0	245.42	243.42	219
30	34.4	2.0	157.51	155.51	280
60	21.9	2.0	100.27	98.27	354
120	14	2.0	64.10	62.10	447
180	10.8	2.0	49.45	47.45	512
240	9	2.0	41.21	39.21	565
360	6.9	2.0	31.59	29.59	639
540	5.3	2.0	24.27	22.27	721
720	4.4	2.0	20.15	18.15	784

**RETURN PERIOD 5 year**

<b>Duration</b>	<b>Intensity</b>	<b>Existing flow</b>	<b>New flow</b>	<b>Flow to storage</b>	<b>Storage</b>
(mins)	(mm/hr)	(L/s)	(L/s)	(L/s)	(M <sup>3</sup> )
5	76.8	2.0	351.64	349.64	105
10	53.4	2.0	244.50	242.50	146
15	42	2.0	192.30	190.30	171
30	27	2.0	123.62	121.62	219
60	17.3	2.0	79.21	77.21	278
120	11.1	2.0	50.82	48.82	352
180	8.6	2.0	39.38	37.38	404
240	7.1	2.0	32.51	30.51	439
360	5.5	2.0	25.18	23.18	501
540	4.3	2.0	19.69	17.69	573
720	3.5	2.0	16.03	14.03	606

**RETURN PERIOD 2year**

<b>Duration</b>	<b>Intensity</b>	<b>Existing flow</b>	<b>New flow</b>	<b>Flow to storage</b>	<b>Storage</b>
(mins)	(mm/hr)	(L/s)	(L/s)	(L/s)	(M <sup>3</sup> )
15	27.6	2.0	126.37	124.37	112
30	17.8	2.0	81.50	79.50	143
60	11.5	2.0	52.65	50.65	182
120	7.5	2.0	34.34	32.34	233
180	5.8	2.0	26.56	24.56	265
240	4.8	2.0	21.98	19.98	288
360	3.8	2.0	17.40	15.40	333
540	2.9	2.0	13.28	11.28	365
720	2.4	2.0	10.99	8.99	388

**Attenuation**

Rainfall Intensities	Return Period	Storage Vol Cum
M100 -240	100 years	1118
Stormwater Management System :		StormTec MC-4500

C) The SuDS proposed for the different catchment areas is:-

*Area (A):* Planting of trees in generous soil volumes to help them become large functional trees.

*Area (B):* Rain water harvesting system, Rain garden planting bed and Trees & Storm Water Soil Cell.

*Area (C):* Rock Lined swale

D) The scheme and components that were chosen were derived from the site topography and the pre-development drainage patterns, which ensure two key overland flood routes through the site (Natural Flow Path) as indicated on drawing No. 4996-02-P30.

For design purposes this site is divided into three separate catchment drainage areas (Area A, Area B & Area C) none of which are interlinked. Refer to drawing No. 4996-02-P30.

*Area (A) :* Landscaped Catchment Area 0.88 Ha, North Westerly Flow path, SuDS proposal for Planting of trees in generous soil volumes to help them become large functional trees. The biodiversity value of the site is been increased by the planting of 2,569 trees and 100's of shrubs and border plants which are all native species.

*Area (B) :* Hardstanding & Roof Catchment Area 1.47 Ha, Drainage system, SuDS proposal diverting water from roof and hardstanding areas to a rain water harvesting system for use as grey water which is fed back to the building and to irrigation system with the excess water overflows from the storage tanks to rain garden planting bed where the existing soil is replaced with 'filter soil' (a mix of 20% topsoil, 30% compost and 50% sand). Beds are planted with vegetation that is tolerant of drought and wet conditions as shown in planting Schedule.

The car parking areas is divide with landscaped Trees & Storm Water Soil Cell islands. The soil cell system provides the trees access to large volumes of un-compacted soil. The trees manage storm water in a manner that increased functional capacity over time. Each area is fed by irrigation system fed through a non-perforated pvc pipe beneath the car park area. The system can temporarily hold large volumes of stormwater that will either be used by the trees (evapotranspiration) or will soak into the ground (infiltration).

Any surplus water from the rain garden planting bed discharges to a proposed silt trap and petrol/oil interceptor before discharging into Attenuation storm water management system (StormTech) with an out fall to the Camac stream. The flow-control manhole at the end of the attenuation ensures that only the Greenfield rate of discharge is passed on to the stream.

*Area ( C ) :* Permeable Catchment Area 0.87 Ha, Easterly Flow path, SuDS proposal is a rock lined swale running parallel to access road which would provide overflow storage and attenuation during higher order events and eventually filtrate into ground.

E) Area (A): Discharged to ground

Area (B):

Grey water In Building:

Item	Quantity	M <sup>3</sup> /day
<b>Proposed Development</b>		
Toilet: 76 persons	50 L/hd/Day	3.8
Outdoor usage :	1,800 L/Day	1.8
Miscellaneous :	900 L/Day	0.9
<b>Total Demand</b>		<b>6.5 m<sup>3</sup></b>

Storm water Cell Islands:

Item	Measurement /Calculation	Comment / Clarification
Volume of cell storage	153.6 x 0.6m x 0.6 = <b>55m<sup>3</sup></b>	Cell area 153.6sqm directly drained 600mm depth 60% retention

Garden Planting Bed:

Item	Measurement /Calculation	Comment / Clarification
Volume of interception storage	336 x 0.75 x 0.4 = <b>101m<sup>3</sup></b>	336sqm Garden area at 750mm depth 40% void factor

Area (C): Discharged to ground.

F) Details of proposed retro-fit SuDS solution to rainwater management at Wilson Auction Premises is indicated on drawing No. 4996-02-P30.

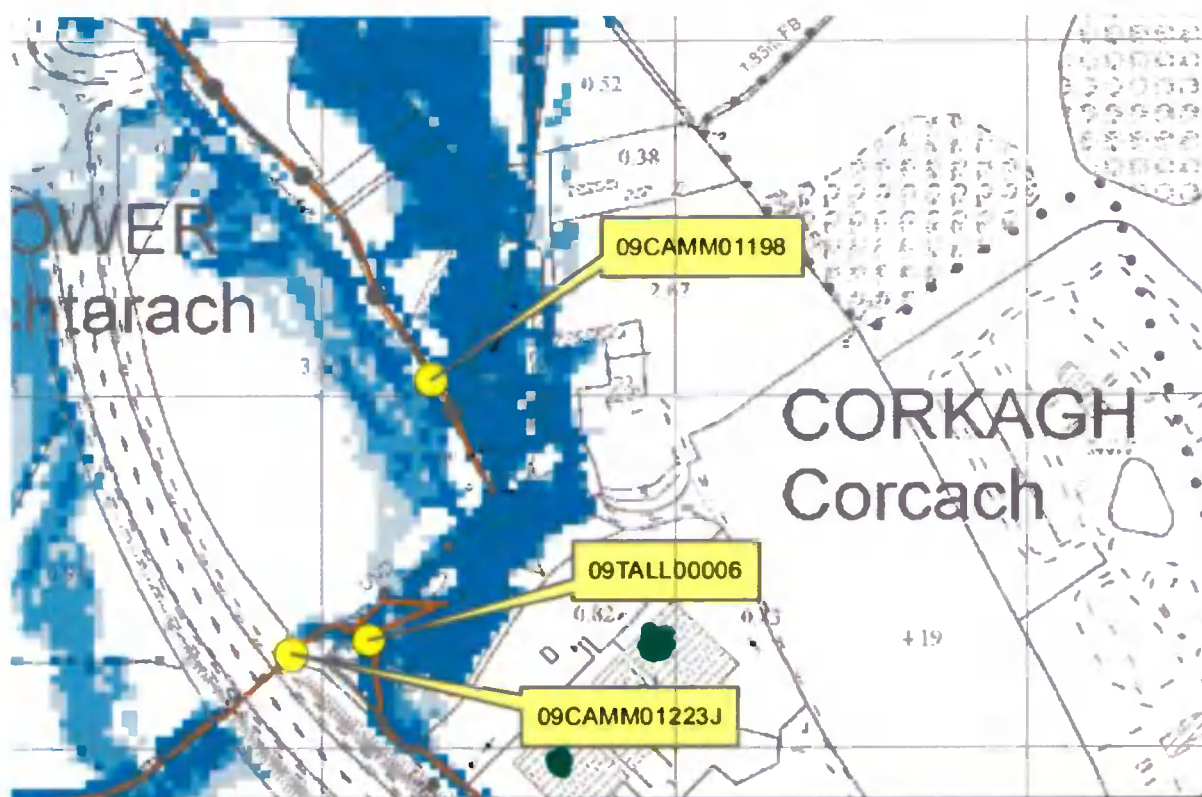
To provide a 1 in 100 year return period volume with an extra 20% allowance for probable climate change the volume of storage required for catchment area B is 1,118m<sup>3</sup>.

The capacity of sourced local components is 162.5m<sup>3</sup> this reduces the underground storage to 955.5m<sup>3</sup>

The Stormwater attenuation system proposed is Storm Tech Chamber Model MC-4500, Installation storage capacity 978cum.

G) All surfacwater drainage is indicated in blue.

H) This site is located within the Eastern District Fluvial Mapping from the CFRAM study compiled in 2017. This assessment considered flood risk from rivers, the sea and estuaries, direct rainfall and groundwater.



Node Label	Water Level (OD) 10% AEP	Flow (m <sup>3</sup> /s) 10% AEP	Water Level (OD) 1% AEP	Flow (m <sup>3</sup> /s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m <sup>3</sup> /s) 0.1% AEP
09Camm01198	77.95	7.61	77.99	11.32	78.04	17.92
09Camm01161	75.15	N/A	75.31	N/A	75.56	N/A
09Camm01137W	74.19	7.56	74.52	14.80	74.79	18.00
09Camm01089X	70.03	N/A	70.17	N/A	70.26	N/A
09Camm01223J	81.22	8.42	81.45	9.52	81.61	14.12
09Tall00006	82.18	2.37	82.37	4.40	82.01	7.80

This site (Green Dot on the map above) is located on Map Series Page 12 of 24, (Camac Fluvial Flood Extents) identifies that the subject site is outside any flood event. To the northwest of the subject site there is a node point ref 09TALL00006 that indicates the following water levels:



10% AEP Water Level: 82.18m OD  
1% AEP Water Level: 82.37m OD  
0.1% AEP Water Level: 82.01m OD

All areas of the proposed development are located above possible flood levels, the existing Ground Level is 83.39m OD and the building floor level is 83.852m OD

Design criteria to address river flooding are to:

- Restrain the excess volume of runoff from developments to that of Greenfield runoff; Maximum discharge rate of 2l/s/ha
- Avoid development on the floodplain.
- return periods of 100 years is applied

There is no development in Flood plain and therefore the river flood storage is not compromised and therefore no compensation storage to be provided.

**Query No.7:-**

7. Having regards to the permanency of the proposed development, all proposals for permanent signage on the site should demonstrate the use of high-quality materials and a high-quality design with sensitive low lighting. Significant consideration should be given to the location of the site in proximity to an existing tourism facility, at the entrance to an accessway to a grouping of protected structures and the open space zoning of the site. The applicant is requested therefore to submit:
- (i) Revised (and full) proposals for all signage on the site taking cognisance of the above.
  - (ii) Details whether the signage differs from that which was previously granted permission on the site.

**Response:-**

The location and type of signage is indicated on drawings

- 4996-02-P1000 Rev 1 : Site Plan/ Signage
- 4996-02-P1001 Rev 1 : Existing Signage

The signage is of a high quality and doesn't detract from area.

Yours sincerely,



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Ronan Clarke, B. Sc. Eng., C. Eng., M.I.E.I. Dip plan, Dip Fire Eng.

Clarke & Company, Engineers & Architects.