From: Hockenhull, Joel <Joel.Hockenhull@balfourbeatty.com>
Sent: 10 October 2023 16:58
To: Morgan, Elsie <Elsie.Morgan@herefordshire.gov.uk>; Allen, Jennifer (02) <Jennifer.Allen2@balfourbeatty.com>
Cc: Harrison, Lauren <Lauren.Harrison@balfourbeatty.com>
Subject: RE: 230563 - Land at the Crossways

Elsie

Having checked, the proposals for the adoption of the drive are only within correspondence, so there is no need for revised drawings

Accordingly our response is a Conditional No Objection

We suggest that the applicant is made aware that the road cannot be adopted.

Joel

Joel Hockenhull CEng MICE

Senior Drainage Engineer | Balfour Beatty | Services | Living Places | Herefordshire Public Realm

| E: Joel.Hockenhull@balfourbeatty.com

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Living Places

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Download the : Herefordshire SuDS Handbook and the Strategic Flood Risk Assessment (Level 1)

From: Morgan, Elsie <Elsie.Morgan@herefordshire.gov.uk>
Sent: 10 October 2023 16:30
To: Allen, Jennifer (02) <Jennifer.Allen2@balfourbeatty.com>
Cc: Harrison, Lauren <Lauren.Harrison@balfourbeatty.com>; Hockenhull, Joel <Joel.Hockenhull@balfourbeatty.com>
Subject: RE: 230563 - Land at the Crossways

Hi Jenny

For my understanding, can you confirm where the proposal refers to gullies and what would need to be shown on amended plans?

Thanks

Elsie

Herefordshire.gov.uk

Elsie Morgan MSc
Senior Planning Officer | South Team
Development Management | Economy and Environment | Herefordshire Council

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From: Allen, Jennifer (02) <Jennifer.Allen2@balfourbeatty.com>
Sent: 10 October 2023 11:26
To: Morgan, Elsie <Elsie.Morgan@herefordshire.gov.uk>
Cc: Harrison, Lauren <Lauren.Harrison@balfourbeatty.com>; Hockenhull, Joel <Joel.Hockenhull@balfourbeatty.com>
Subject: {Disarmed} RE: 230563 - Land at the Crossways

Hi Elsie,

Just to confirm this a HOLDING OBJECTION consultation response.

Information which needs to be provided and approved prior to planning being granted:

It would not be possible for HC to adopt the proposed access road. The road would drain into a privately owned system, that the highway authority would not maintain. Also the proposals to install gullies would lead to debris blocking the flow control. ***We suggest that the applicant is made aware of this before planning is granted so that the drawings can be updated.***

Information which can be provided at condition:

We accept the proposal to utilise permeable paving to attenuate runoff from the site. As the site is generally level we accept the proposals to install diffusers to convey roof water into the permeable paving. ***A condition will be required requesting a detailed surface water drainage strategy***

The detail design will need to optimise the depth of the permeable paving to maximise the amount of rainwater storage. The design should seek to reduce the size of the downstream storage without compromising the SuDS design criteria

Kind regards,

Jenny

From: Hockenhull, Joel <Joel.Hockenhull@balfourbeatty.com>
Sent: 06 October 2023 16:55
To: Morgan, Elsie <Elsie.Morgan@herefordshire.gov.uk>
Cc: Allen, Jennifer (02) <Jennifer.Allen2@balfourbeatty.com>; Harrison, Lauren <Lauren.Harrison@balfourbeatty.com>
Subject: 230563 - Land at the Crossways

Elsie

CONDITIONAL NO OBJECTION

It would not be possible for HC to adopt the proposed access road. The road would drain into a privately owned system, that the highway authority would not maintain. Also the proposals to install gullies would lead to debris blocking the flow control. We suggest that the applicant is made aware of this before planning is granted so that the drawings can be updated.

We accept the proposal to utilise permeable paving to attenuate runoff from the site. As the site is generally level we accept the proposals to install diffusers to convey roof water into the permeable paving

A condition will be required requesting a detailed surface water drainage strategy

The detail design will need to optimise the depth of the permeable paving to maximise the amount of rainwater storage. The design should seek to reduce the size of the downstream storage without compromising the SuDS design criteria

We await the revised drawings of the road

Joel

Joel Hockenhull CEng MICE

Senior Drainage Engineer | Balfour Beatty | Services | Living Places | Herefordshire Public Realm

E: Joel.Hockenhull@balfourbeatty.com

From: Alan Corner <alan@cornerwaterconsulting.co.uk>
Sent: 11 September 2023 14:58
To: Hockenhull, Joel <Joel.Hockenhull@balfourbeatty.com>; Morgan, Elsie <Elsie.Morgan@herefordshire.gov.uk>
Cc: Withers, Simon <Simon.Withers@herefordshire.gov.uk>; Harrison, Lauren <Lauren.Harrison@balfourbeatty.com>; Allen, Jennifer (02) <Jennifer.Allen2@balfourbeatty.com>; Matt Tompkins <matt@ttplanning.co.uk>
Subject: 230563 - Land at the Crossways

Hi Joel and Elsie,

The planning application
At this planning stage, we are seeking to demonstrate only that the proposals are capable of being adequately drained. The detailed drainage design, which is discussed in your email is a matter for detailed design which is covered by building regulations and, in some cases, a planning condition. These matters are not relevant to the issuing of planning permission. It is important that this is recognised prior to continuing our discussions in respect of the detailed design below.

Overall, it is my view we have demonstrated that the site is capable of being drained in a manner which would comply with all relevant legislation.

Detailed Design Matters
Nonetheless, we would like to confirm that at the meeting it was clarified that the design proposed is permeable paving adjacent to the houses taking roof runoff, with a downstream geocellular tank that has 2 flow controls to limit outflows to the required various Greenfield Rates.

Also, that this site has a suitable SuDS design proposal that matches the approved residential site 100m upstream - in that 100-year rainfall plus 45% Climate change plus 10% Creep is all collected and attenuated before being released to the river at the original i.e. without development Greenfield flow rates.

Finally, there may be some preference within BBLP in respect of a below ground tank versus at surface open green SuDS elements, but as the BBLP and the council guidance does not allow open green SuDS within the 100-year flood plain, nor is storage under an adopted highway allowed, the design submitted meets all council plus BBLP requirements.

At the detailed design stage of work the shared driveway may be fully detailed as either an adoptable highway, in which case it will require gullies, or similar, to collect rainfall. Detailed design will follow the planning approval. If the shared driveway is however formed of permeable paving as the hard surfacing (which Andy Byng has agreed on other multiple dwelling sites) then there will be no gullies required.

We are happy to run whatever design scenarios BBLP require at the detailed design stage, including a delayed discharge of flow out of the stone sub-base, which based on research reviewed to date will be a minimum of 1 hour in time, plus as set out in the attached Interpave Design Guidance section 9.3 only 50% or rainfall will exit permeable paving during a rainfall event with the rest discharged over the following 2 - 4 days providing Long Term Storage. At the end of this email, we have modelled the 30-year event without the buried tank as requested.

General SuDS Thoughts
The council SuDS Guidance that BBLP wrote includes extracts of the Birmingham City SuDS by ARUP for:

- attenuation with multiple flow controls downstream of groups of small individual house geocellular tanks,
- permeable paving collecting rainfall from a number of (terraced) dwellings,
- plus flow controls downstream of raingardens/oversized pipes.

So basically, every single typical SuDS element, with multiple small flow controls as Source Control across the housing zone, as opposed to one large pond and one flow control as an end of pipe design solution. In the attenuation version the permeable paving is used to attenuate and slow the flows, a strong SuDS principle used UK wide since 2000 - as even without flow controls the stone slows the outflow of the rainfall by hours.

The council SuDS Guidance states “Orifices can be as small as 25mm or even smaller, as blockage protection is implicitly provided by the nature of the structure.” So yes, at detailed design we would consider some 25mm or 20mm orifices to slow the rainfall even further inside the stone sub-base of the parking adjacent to the houses. If the shared driveway is also permeable paving then the flow controls on the tanks will be even better protected as the stone sub-base will filter all rainfall – as stated in the council’s SuDS Guidance. Even without the stone sub-base filtration a storage tank creates a very slow velocity of water and further settlement of debris that made it past the silt traps would occur, protecting the flow controls. The current design has a 57mm vortex flow control at the base of the tank and a 50mm orifice at higher level.

If BBLP are now fully endorsing the use of permeable paving to attenuate dwelling roof runoff, which differs from the comments made at the now fully approved application 212084 Leys Hill, then we will of course revert to our preferred, and the UK standard SuDS, approach of connecting the roof runoff to the local paving, patio, driveway, etc. around the dwelling.

In terms of flows we always work down to the BBLP stated minimum rate preference of 2 l/s to ensure a flow control does not become a maintenance liability.

Network Testing as Requested by BBLP

To test the network without the buried tank for 30-year rainfall events as requested by BBLP, the buried tank was reduced to 1m^3 but keeping the flow controls. To represent in the modelling the Interpave research that only 50% runoff will occur during the storm the IL of the sub-base was lowered to 100mm below the outlet and infiltration allowed. As below this shows that the scheme with the river in full flow and surcharged does not flood, but the outflow at the Outfall of 3.6 l/s exceeds 2 l/s.

INTERPAVE RESEARCH

9.3 LONG TERM STORAGE (VOLUME CONTROL)

CBPPs reduce the volume of rainfall that flows out from them significantly and the time it takes for the water to flow out is much longer than for conventional drainage systems. Studies reported in CIRIA report C582 (CIRIA, 2001) have shown that some 11% to 45% of rainfall flows out from the pavement during a rainfall event. Subsequently over the 2 to 4 days after an event, more water flows out to give a total outfall of between 55% and 100%. Thus the CBPP should achieve the aims of long term storage, as it will reduce the volume of runoff at critical periods.

For most relatively small schemes the CBPP should not require any specific long term storage provision, especially if it is not collecting runoff from impermeable areas. This should be agreed with the regulators during the preliminary design process.

CAUSEWAY	Corner Water Consulting Ltd	File: 230911 no tank paving 11 Network: Storm Network Alan Corner 11/09/2023	Page 7 Crossways Peterchurch SWMP Surcharged Paving w Infiltration

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 93.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	8	42	120.308	0.728	4.4	0.9608	0.0000	SURCHARGED
15 minute summer	Outfall	1	120.101	1.280	0.2	0.0000	0.0000	OK
60 minute winter	Depth/Area 2	42	120.305	1.091	4.0	0.6275	0.0000	FLOOD RISK
60 minute winter	4	42	120.306	0.991	6.3	1.1212	0.0000	FLOOD RISK
360 minute winter	5	304	120.065	0.225	1.1	0.0358	0.0000	OK
360 minute winter	6	304	120.066	0.226	1.6	0.0359	0.0000	OK
360 minute winter	7	304	120.065	0.225	0.8	0.0358	0.0000	OK
60 minute winter	9	42	120.308	0.830	4.3	1.1193	0.0000	SURCHARGED
60 minute winter	10	42	120.307	0.973	9.2	1.5291	0.0000	FLOOD RISK
360 minute winter	11	304	120.065	0.165	3.2	0.0000	0.0000	OK
60 minute winter	J1	42	120.306	1.072	4.9	0.0000	0.0000	FLOOD RISK
15 minute winter	12	11	120.653	0.103	6.3	0.1918	0.0000	SURCHARGED
15 minute winter	13	11	120.524	0.074	4.8	0.1244	0.0000	OK
15 minute winter	14	11	120.528	0.088	9.4	0.1854	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	8	1.000	9	-2.1	0.347	-0.050	0.6100	
60 minute winter	Depth/Area 2	1.005	Outfall	3.6	0.090	0.043	0.6080	7.1
60 minute winter	Depth/Area 2	Infiltration		0.3				
60 minute winter	4	1.003	J1	4.9	0.488	0.117	0.4804	
360 minute winter	5	Flow through pond	11	1.7	0.025	0.001	27.7448	
360 minute winter	6	Flow through pond	11	1.7	0.025	0.001	27.7448	
360 minute winter	7	Flow through pond	11	1.7	0.025	0.001	27.7448	
60 minute winter	9	1.001	10	3.8	0.311	0.099	1.0298	
60 minute winter	10	1.002	4	6.3	0.519	0.176	0.1567	
360 minute winter	11	Orifice	10	1.7				
360 minute winter	11	Infiltration		0.8				
60 minute winter	J1	1.004	Depth/Area 2	4.0	0.430	0.114	0.1728	
15 minute winter	12	5.000	5	6.2	0.826	1.010	0.0140	
15 minute winter	13	3.000	7	4.8	0.838	0.735	0.0123	
15 minute winter	14	4.000	6	9.4	0.963	0.499	0.0199	

Best Regards Alan

Alan Corner
Director
Corner Water Consulting Ltd