Date of Response: 13/8/2024

SITE:	Land at Three Elms, North East Quarter To the north east of Huntington and bounded by Three Elms Road and Roman Road, Hereford, Herefordshire HR4 7RA
TYPE:	Outline
DESCRIPTION:	Outline Planning application with all matters reserved, except access, for the first phase of an urban extension comprising up to 350homes (Use Class C3); park & choose interchange; together with open and play space, landscaping, infrastructure and associated works.
APPLICATION NO:	222138
GRID REFERENCE:	OS 348711, 241895
AGENT:	Miss Tara Johnston

Our knowledge of the development proposals has been obtained from the following sources:

- Site Boundary (P1);
- Three Elms North East Quarter Updated Flood Risk Assessment and Drainage Strategy Version 11.0 – Waterman dated 12/6/2024
- Geosmart Flood Risk Review 8/9/2022 (submitted by Huntington residents)
- Site Visit to Newcourt Farm and Beeches Business Park 22nd February 2023
- Site Visit to meet Tenant Farmer to discuss Spring 20th Sept 2023
- Hydraulic Modelling Report Revision P2 16th May 2024
- Flood Estimation Report
- Site Access Arrangements – Three Elms Road and A4103 Roman Road

Site Location

Figure 1: Environment Agency Flood Map for Planning (Rivers and Sea), September 2022

Overview of the Proposal

The Applicant proposes the construction of up to 350 dwellings and a new linear park to the north of the Yazor Brook. New site access points are proposed to Three Elms Road to the east and Roman Road to the north. A 'park and choose' site is proposed in the northern part of the site, adjacent to

Roman Road. The site covers an area of approx. 24.8ha and is currently agricultural land. Yazor Brook flows along the southern boundary of the site. The topography of the site slopes down from north to south by approx. 12m.

The Three Elms development comprises one of the strategic development sites promoted in the Core Strategy as part of the Western Urban Expansion. Policy HD5 of the Core Strategy includes a number of flood risk related requirements for the development of this site namely:

- Sustainable drainage and flood mitigation solutions should form an integral part of the green infrastructure network.
- Opportunities to mitigate flood risk arising from the Yazor Brook for existing residents and businesses within the city should be explored.

We highlight that any planning application should be submitted in accordance with the Herefordshire SuDS Handbook and the Herefordshire Council Planning Applications Flood Risk & Drainage Checklist available on the Council's website:
https://www.herefordshire.gov.uk/info/200142/planning_services/66/about_planning_services/11

Flood Risk

Of key prevalence is the assessment of potential flood risk benefits associated with the Yazor Brook, as required under Policy HD5 of the Core Strategy.

The applicant has presented a revised FRA which incorporates outputs from the Yazor Brook hydraulic model including 37% climate change. The mapping that has been presented demonstrates that all residential areas will be outside of Flood Zone 3, assuming the undefended scenario.

7.11.2023 The modelling assumes that the Flood Alleviation Scheme at Credenhill remains functional (this is explained in the Modelling Report, item 4.11.7). This means that the modelled flood extents are for the Defended scenario rather than the UnDefended scenario. However, we appreciate that the UnDefended simulation was provided in FRA & Drainage Strategy Rev 7 Appendix F

The Geosmart report identifies a location at Towtree Lane where the model was simplified. The related inflow is close to the Three Elms site. The model was developed as a tool to provide flood mapping in central Hereford, not to inform the Three Elms site. For the benefit of the residents, we request that the applicant revises the model to replicate this inflow.

7.11.2023 The Flow Estimation Report indicates that this tributary was modelled (Site code UN01, Table 3.1)

Geosmart have also referenced three recent developments in the vicinity of the site.

The surface water strategies for Tillington Road and The Paddocks were reviewed and approved prior to construction, runoff **rates** for both sites were gently inflated owing to blockage risks (runoff rates would have sharply increased if the flow controls were to block). We see no reason for further analysis of the discharges from these sites because the runoff **volumes** have not significantly increased.

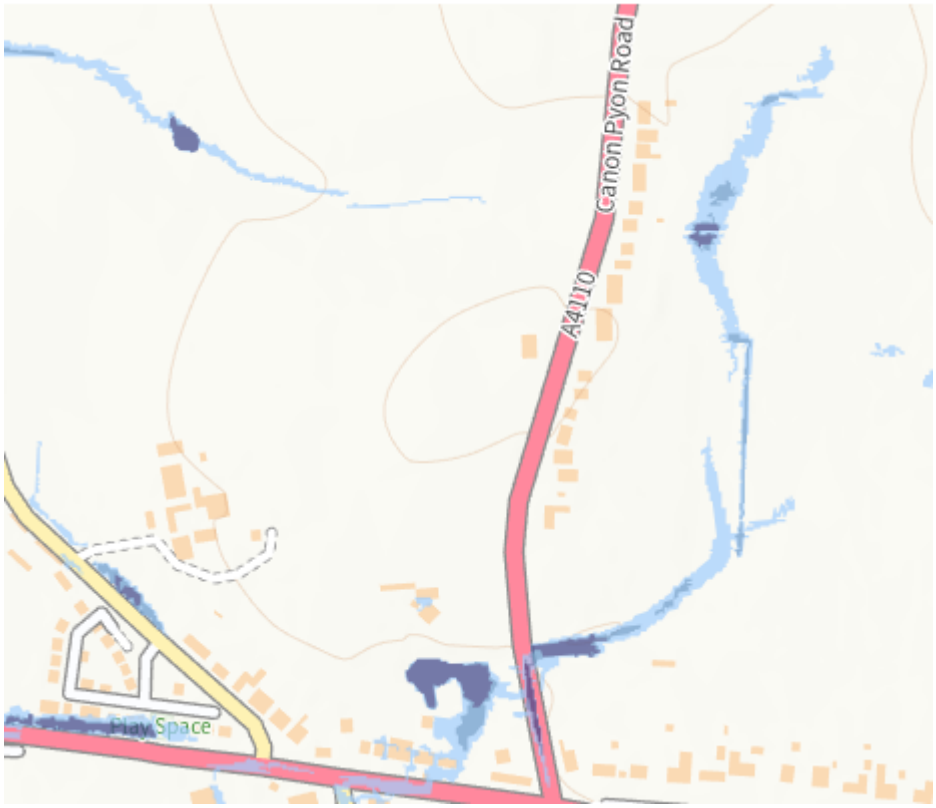
The Livestock Market was constructed around 15 years ago when SuDS guidance was less developed. The applicant has queried whether the SuDS were installed correctly. Whilst the site is quite large, it is not on the banks of the Yazor Brook, moreover there are other impermeable areas upstream such as the Credenhill MOD base. We request that the applicant advises how impermeable areas within the catchment were modelled and provides commentary and technical justification for the runoff that may occur from these sources. As there is an absence of design information, runoff **rates** and **volumes** from the Livestock Market may be assumed to be increased.

7.11.2023 The applicant has provided commentary (23.10.2023) as follows. It is recognised that modelling techniques rely on the adoption of parameters that are selected to define the catchment using a coarse approach, which makes simulation of fine detail impractical (e.g. localised impermeable areas).

“Infiltration has not been represented in the Yazor Brook fluvial hydraulic modelling. Different surfaces on the floodplain have been represented using OS MasterMap and Mannings n coefficients to simulate the differences in roughness.”

“A hydrology study has been undertaken to derive peak flow estimates for the Yazor Brook upstream of Three Elms Road. This study has been done at a catchment scale. The catchment upstream of this location is 42.98km2 and predominantly rural. Detailed assessment of runoff rates and their contribution to the flow in the Yazor Brook at individual urbanised areas within the wider catchment has not been undertaken. However, the impact of urbanisation has been considered in the catchment hydrology by using standard Flood Estimation Handbook methods for example to adjust the estimation of QMED using urban expansion factors which are derived based on the fraction of the catchment classified as urban or suburban.”

The Geosmart Report also references the inflow of highway drainage from the A4110 that drains via the Paddocks culvert. The extract below from the Surface Water Flood Map suggests that areas east of the Canon Pyon Road are included in the Yazor Brook catchment. Highway Drainage records confirm that there are highway drains on these roads that discharge to the Yazor Brook. The applicant is requested to advise how this is currently modelled and if appropriate include provision for a specific inflow accounting for this flow.



7.11.2023 The revised FRA includes an allowance for 1.98 Ha of Highway that currently drains to The Paddocks Culvert. We note that the land immediately east of the Canon Pyon Road has since been developed, with provision made for an adoptable surface water sewer draining the new housing estate.

There is a risk that the A4110 (Three Ellms Road) culvert could become subjected to a partial blockage. An assessment is required to demonstrate the impact of a 50% blockage in the event of a 100 year + 37% climate change storm.

7.11.2023 The 50% blockage scenario could be addressed at Reserved Matters stage.

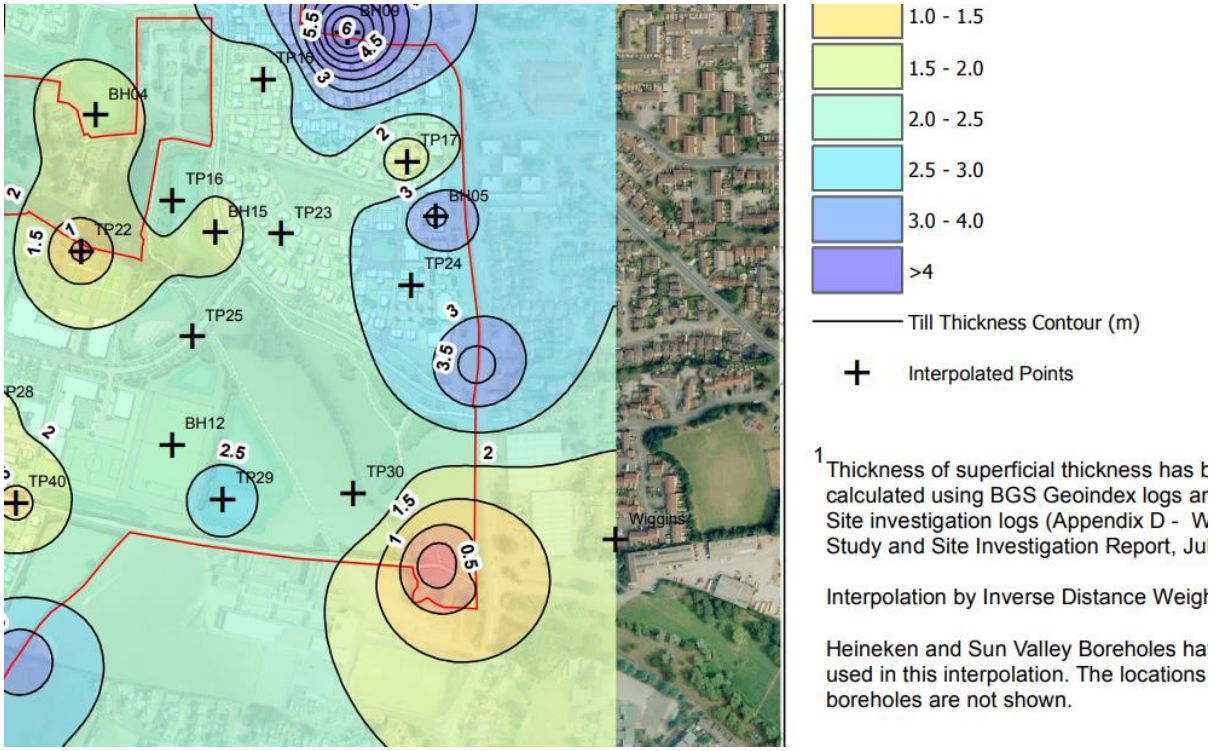
The FRA supporting application 162690 addendum included hydraulic modelling of the Yazor Brook to assess the benefits of on-site fluvial storage and to ensure that the works (and scheme as a whole) do not increase flood risk outside of the site boundary. Under more recent dialogue with the EA the concept of lowering ground levels in SPZ1 has been rejected.

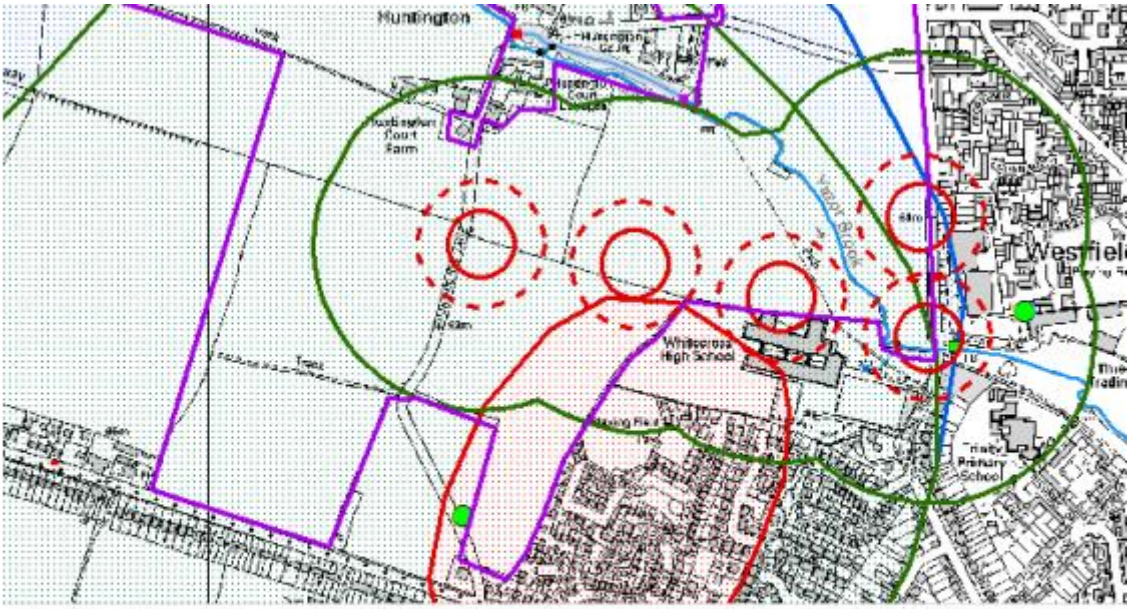
13.8.2023 The applicant has presented proposals for ground lowering within R04 that would mobilise a maximum of 1500m3 flood storage. Figure 7.2 in the modelling report shows that this would be installed on the eastern side of the Yazor Brook. The SPZ extents could however alter on receipt of the forthcoming groundwater modelled SPZ extents. This may make it possible to increase the size of the flood storage area. The modelling results do not show a tangible benefit and so re-sizing of the storage area would be encouraged after the SPZ extents are known

The applicant has advised that the EA requirements on Till depth can be achieved. We assume that the information submitted is both genuine and representative of site conditions so treat this advice in good faith.

The Environment Agency have commented on the depth of Till thickness as follows (email 6.11.2023)

“Based on the previous site investigation results the Till thickness in this area is estimated at around 2.0-2.5m (green), which is not particularly substantial. “





Key:

Red outline/ stippled infill = Heineken SPZ1
Green outline/ stippled infill = Heineken SPZ2
Blue outline/ stippled infill = Heineken SPZ3
Purple line = development area
Red solid line only = SVF default SPZ1
Green solid line only = SVF default SPZ2
Red dotted line = Simple Calc'n SPZ1
Light Green Spot = EA Boreholes

We understand that finished floor levels will be set a minimum of 600mm above the 'flood level'. We agree with this approach in principle although the definition of 'flood level' has not been clarified. We highlight that the following approach is expected for each development vulnerability classification: Further modelling would be required to confirm the Test scenario, at Reserved Matters stage.

Development Classification	Design scenario	Test scenario
Less vulnerable	600mm above the 1 in 100 yr + 37%CC with operational FAS	Above highest of: 1 in 100 yr + 80%CC with operational FAS; 1 in 1000 yr with operational FAS; or 1 in 100 yr + 37%CC with fully blocked FAS (i.e. undefended).
More vulnerable	600mm above the 1 in 100 yr + 37%CC with operational FAS	Above the highest of: 1 in 100 yr + 80%CC with operational FAS; 1 in 1000 yr with operational FAS; or 1 in 100 yr + 37%CC with fully blocked FAS (i.e. undefended).
Key access routes	Remain dry up to and including the 1 in 100 yr + 37%CC with operational FAS	Remain safe (low hazard) for the events above.

Consideration should also be given to the residual risk events discussed as 'test scenarios' above, noting that the road should remain safe during these events if it is considered important for access and egress during a flood event.

The applicant has suggested that all properties will be raised up 150mm. This is a county wide requirement as defined in the Herefordshire SFRA Level 1. The applicant will need to consider locations where surface water flooding may occur and consider localised raising of properties by 300mm

7.11.2023 - Under item 9.2.7 the applicant has suggested that houses will be raised 150mm.

Finished Flood Levels can be considered in detail at Reserved Matters stage. This will involve running the Yazor Brook model to simulate the scenarios/storms listed under Test scenario above.

Also, there will be locations where surface water runoff from upper areas of land will need to be reconsidered (including south of The Paddocks, as referenced in item 3.2.12).

Surface Water Drainage

At detailed design stage the surface water strategy and SuDS will be subjected to a detailed technical review. The following comments relate to a review of the Outline submission, which has presented the principles of the surface water strategy without supporting detailed calculations.

We note that the initial calculations are based on 60% impermeable area which forms a basis for this submission. This has informed the 'Management of Increased Volume' as referenced in the Geosmart Report. We note that this figure is preliminary and during the proposed detailed design review it may need to be altered as the design evolves.

Permeable areas alongside properties will ultimately discharge into the ponds as the ground is not porous, and so in the reserved matters application the applicant may need to consider the implications of the associated volume of greenfield runoff.

7.11.2023 Under our February 2023 comments we raised the issue of additional runoff from the following 2 areas. We note however that there is ample space within the development area for larger ponds, so we accept that a surface water strategy could be developed within the constraints of the site.

- We note that there are proposals to develop the Park and Choose area. There will be a net increase in runoff from this area.
- We request that the applicant confirms whether the presence of land drainage features from outside the red line area (i.e. the area shown below) have been considered. 13.8.2024 we note that there is a planning application for a Care Home on this plot.

We note that the applicant has presented revised greenfield calculations utilising FEH methods and FEH2013 rainfall data. The latest version 11.0 of the FRA & Drainage Strategy (12.6.2024) includes corrected figures. We note however that the applicant has based the contributing areas for the

respective ponds based on the anticipated Impermeable Area + 10% Urban Creep. This has the net effect of increasing the proposed runoff rate by 10%. We note that there is ample space within the development area for larger ponds, so we accept that a surface water strategy could be developed on the basis that the contributing areas for the respective ponds is based on the anticipated Impermeable Area only. The ponds would then need to be sized making an allowance for the runoff volume for the Impermeable Area with 10% Urban Creep. This approach ensures that the development will maintain the existing greenfield runoff rates shortly after completion, noting that urban creep tends to occur over subsequent decades.

The greenfield runoff rates that have been presented as part of the Outline submission will need to be corrected at Reserved Matters stage.

As part of the initial comments on version 4.0 of the Drainage Report, Objector Mr Nugent has raised some issues regarding the runoff rate (Table 1). To achieve both the volumetric and flow criteria in all storms, it is common practice to limit the pass forward flow to QBAR. Since the objections were raised version 8.1 has been released with corrected figures.

As noted in item 4.5.3 of Tetratech FRA (June 2022) a greenfield rate of 1.69 l/s/Ha was agreed for the wider site strategy (based on IoH 124). The latest Drainage Strategy identifies a rate of 2.15 l/s/ha based on the FEH statistical method.

We note that under their correspondence dated 13th April 2021, the EA have identified the need for a design that features a slow discharge to the brook.

The Indicative Layout Drawing shows the proposals to divert the A4103 Highway Drainage into a swale in the POS. We agree with this principle and note that the swale will provide treatment to the discharging water. The position of the headwall will need to be approved to ensure that the outfall will self-cleanse. The swale needs to be designed to mimic the existing scenario of water tracking across farmland. The swale will need careful design so that the time of concentration at the Yazor Brook is broadly similar to the existing scenario.

13.8.2024 We note the submission of a Site Access Arrangement Drawing for Roman Road. It has been proposed that the existing highway drain will be extended to discharge into the new swale. Herefordshire Council policy dictates that council assets need to be installed in publicly owned highway. At this stage we are unclear whether all of the site roads will be put forward for HC adoption. It may be necessary to install the new drain below the hammer-head (highway), with the new drain installed below it. Further to subsequent discussion with HC it may be possible for the the hammer-head (highway) to be adopted along with the highway drain.

We note however that there are some gullies on the old section of Roman Road (north of the Paddocks development) that will continue to drain to the same highway drainage outfall. The outfall will remain active and will be a source of flood risk to the Three Elms development. We note that there are proposals for a Park and Choose and until this area is developed the field ditch will also receive runoff. In addition, there is a risk of the culverted watercourse at the Paddocks blocking with debris, consequently there may be a risk of surface water flooding from this estate unless additional works are completed as follows.

The applicant would need to reach an arrangement with Herefordshire Highways to fund a Public Realm highway drainage project, to divert the highway drains on the Old Roman Road into the more recently built section of carriageway. The new section of road was rebuilt around 20 years ago and a highway drain was built that spills into balancing ponds alongside the Yazor Brook.

7.11.2023 The applicant has advised as follows (email 2.11.2023) :-.

“Our drainage team have reviewed the comments and have confirmed that we understand there will be two remaining gullies on Old Roman Road which still drain through the Paddocks. The new swale would take the vast majority of flow and we believe the discharge from these drains would be very low. It is noted that these sit outside of the redline boundary and therefore do not feature within our drainage strategy proposals. On that basis, we propose an appropriately worded condition to require the applicant to gain an agreement with Herefordshire Highways to divert the two highway drains on the Old Roman Road into the more recently built section of carriageway of Roman Road. “

The Highways Authority require that modifications or alterations to the existing highway drainage system are completed by an approved Contractor. We note that the applicant has agreed to the principle of making changes to the existing drains on the Old Roman Road. We consider that a condition could be drafted that enforces the changes to the highway drainage system, however in practice it would be impractical for the applicant or their agents to modify the existing highway drainage system.

13.8.2024 Item 9.2.1 reads as follows :-

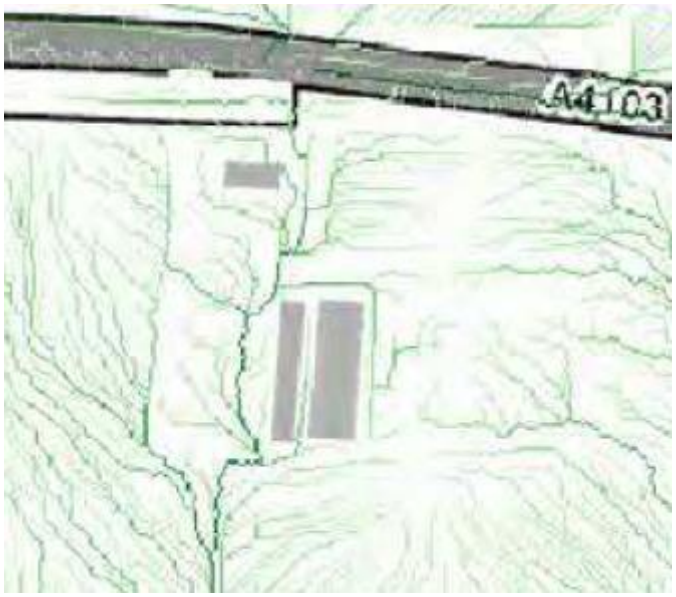
“Drainage Works within the Roman Road may require a S278 agreement or alternative for minor works subject to Herefordshire Council requirements”

We reiterate our original stance that modifications to the existing highway drains would need to be completed by an authorised agent of Herefordshire Council. Section 278 of the Highways Act relates to the adoption of new highways, not modifications to existing assets.

We accept that there will be a means to make these alterations but do not accept that this issue can be completed by the developer.

The FRA has now considered the risks associated with the Balancing Pond at the Paddocks site overflowing, although further consideration is required as explained below. The Paddocks balancing pond drains into a surface water sewer on Roman Road. The sewer is on higher ground. If there was a blockage in the surface water sewer on Roman Road, water would spill from the lowest point on the surface water network. The forementioned pond is at the lowest location and so there is a risk that the pond could fill and overflow onto adjacent land.

The Geosmart report (Figures 11 and 12) illustrates the topography.



At Reserved Matters stage it will be necessary to consider the quantity of water that may be released from the Paddocks Balancing Pond and provide adequate provision within the Three Elms development to cater for this risk. The FRA only needs to consider the implications of this surface water flow route, which is likely to require property thresholds being raised 300mm due to the surface water flood risk. The low points on the site roads will need to be considered.

7.11.2023 At reserved matters stage an exceedance plan will needs to be issued showing where water would be directed based on proposed ground levels, with details of the respective property thresholds that may be raised up.

Objector Mrs Geeson has raised some valid issues regarding ephemeral groundwater. There is a risk that if buildings are constructed and springs surface, then home-owners may connect the spring water into the foul drains. This can lead to situations where foul drains become overloaded and this in turn can lead to episodes of foul flooding. Springs can also create a nuisance to road users particularly in freezing conditions.

Owing to the quantity of water emerging in the soil to the west of Beeches Business Park, the applicant was requested to complete trial trenches uphill of where the water is emerging.

7.11.2023 Since making this request, Welsh Water have advised that to establish whether there was a leak in the main, the water main was isolated but the rate of flow into the soil remained constant - it was concluded that there is no water leak here.

The applicant has advised that they have rodded the spring pipe to determine it’s alignment. The applicant has made the judgement that the pipe appears to receive flow from Beeches Business Park and has suggested that there is no need to consider the discharge.

In September 2023, BBLP interviewed the Tenant Farmer. The family have been tenant farmers since 1896. The Tenant Farmer was born in Hereford and has always lived in Huntington. He advised that the spring water used to be used for domestic supplies at several properties. There were 2

boreholes. Traces of sewage were found in the supply and so a mains water supply was then provided.

The resident at Newcourt Farm has been living there 27 years. He advised that the spring water never stops and has always been flowing.

We conclude that the spring water (i.e. Not a leaking pipe) needs to be considered in the layout of the site. This brings several issues that have not been considered by the applicant.**: -**

- The Indicative Surface Water Drainage Plan P07 shows a yellow line (the existing groundwater culvert) passing into the boundary of Newcourt Farm. The culvert is shown passing below the proposed swale and below the proposed highway. There are no details showing who would own this asset and no proposals that may demonstrate that the spring water can be successfully isolated from the swale for the lifetime of the development. A maintenance strategy would also be required.
- The spring water flows via a culvert system through Newcourt Farm and currently discharges into a ditch to the east of St Mary Magdalene church. If the spring were diverted, then applicant would be aware of any environmental issues associated with removing the base flow to the ditch. It may be feasible to divert the spring water but if so this ditch would no longer receive a base flow.

The applicant has proposed diverting water from the swale into a ditch that would run east of Newcourt Farm.

13.8.2024 Following a site meeting and subsequent discussions the applicant has accepted that the spring water needs to be accommodated within the development. It has also been agreed that a decision on how this water may be drained across the site will be made at Reserved Matters stage

The resident at Newcourt Farm has identified the presence of their own foul drainage infrastructure within the field owned by the Church Commissioners. Reports indicate that the property deeds allow for the provision of a septic tank and spreaders on this land. We understand that the resident of Newcourt Farm has re-routed foul drainage from the same location as the old septic tank, to a new package treatment plant in their front garden. Any proposals regarding new surface water drainage infrastructure will need to consider future arrangements for the foul drainage infrastructure that serves Newcourt Farm

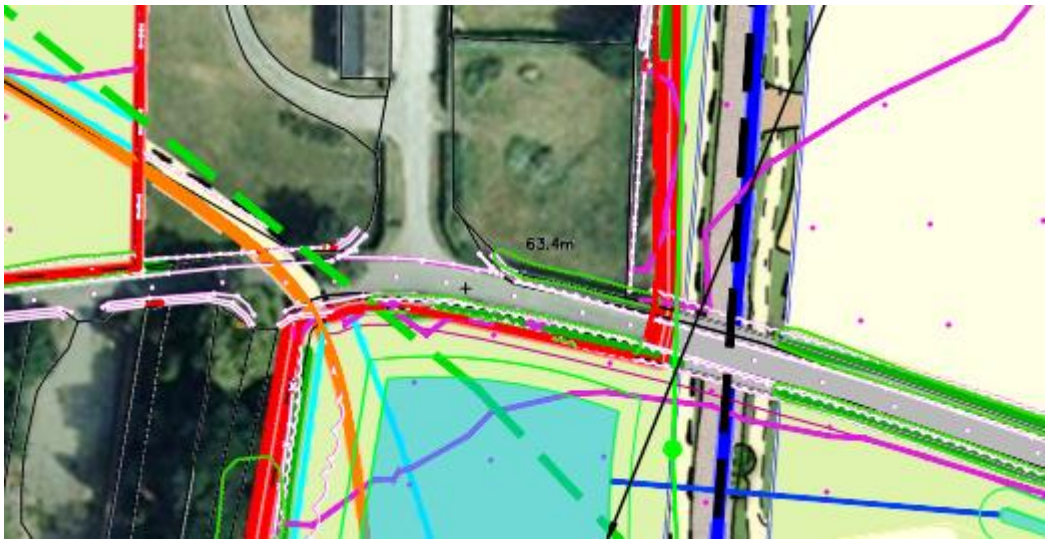
7.11.2023 The applicant has advised as follows (email 2.11.2023)

“In terms of foul drainage infrastructure at Newcourt Farm, it should be noted that the final location and dimensions of the proposed drainage are subject to further design at the detailed design / reserved matters stage. We consider that the detail of this could be secured by condition with reference to the need to undertake the required surveys to confirm the location of the foul infrastructure prior to undertaking detailed design. “

The proposals for a ditch to the east of Newcourt Farm are acceptable. However, the presence of private foul infrastructure could lead to the ditch needing to be aligned on a different route to shown on the Indicative Surface Water Drainage Plan P07. The alignment of the proposed site road may therefore need to be altered at reserved matters stage.

The revised drawing shows a short highway culvert installed between the proposed swale and the ditch. The applicant will need to consider the depth of any ditch and the size of this culvert, noting the requirements of the Culvert Design Guide. The 100 year + Climate change design flow needs to be established to confirm flow capacity requirements are met. Security screens present a risk of blockage and so should be designed out. If a short section of culvert is proposed, then it may be

possible to avoid installing security screens at both the inlet and outlet, by following the respective design guidance. Through careful design it may be possible to eliminate the need for such screens. Twin culverts are not preferred as one culvert will tend to block. Further clarity on these proposals is needed.



Balancing Pond B2 appears to be proposed over the top of an abandoned DCWW water main. Permission would be required from DCWW regarding removal of this apparatus. The size of the easement alongside the strategic DCWW water main west of Balancing Pond B2 should be shown on the layout plan.

7.11.2023. The water main is labelled as abandoned, but still remains a DCWW asset. Abandoned water mains remain valuable assets. In some cases, it is viable to return abandoned water mains into service. The water companies sometimes use the abandoned mains as sheaths (inserting new foul or clean water pressure mains inside them) thus avoiding the need to excavate when they install new assets. The water companies would have the rights to allow other utility companies to utilise the redundant mains.

13.8.2024 The applicant has approached DCWW regarding the possibility of removing sections of the abandoned water main. DCWW have no objections to this proposal.

Measures need to be taken at an early stage in the design, to ensure that the land drainage and the SuDS are kept separate. The ditch (referred to above) could overflow onto Huntington Lane and then water could spill into balancing pond B2. Road levels along the lane and kerbing need to be considered.

To ensure that there is sufficient space on the verge, a cross section is required across the verge that shows the depth of the highway culvert below Huntington Lane. This cross section may be provided at Reserved Matters stage.

7.11.2023 Under the latest proposals the culvert alongside the balancing pond has been replaced as a swale. The length of the highway culvert has been considered so that where ground levels are lower (i.e. where land drainage cannot flow into the pond) the drainage system can revert to open ditch, or swale.

Pond B2 is located very close to the swale. The swale is shown crossing over the top of the culvert that links Ponds B2 and B3. We have considered these issues and recognise that there is scope to reposition Pond B2 to reduce the risk of water draining into the attenuation feature. If the footpath

were diverted, then it would be possible to move Pond B2 to the west. Accordingly, this would create a wider corridor to install the swale alongside the highway.

The applicant will need to recognise that there is a risk that the footpath may need to be diverted, which may require Secretary of Stage approval.

The owners of the respective drainage assets should be defined. For an application of this size we would expect any culverts below public highways to be presented to Herefordshire Highways for adoption. This process would require an AIP (Approval In Principle) regarding the proposed civil design.

We note that the ponds are all designed with “300mm freeboard levels” set at the same level as “minimum earthworks plateau levels”. Please refer to the Herefordshire SuDS Handbook page 48. The purpose of the freeboard is to account for setting out errors and settlement.

Conversely civil engineering structures such as concrete weirs within manholes can be installed with more refined levels of accuracy than spillways from ponds. If a concrete weir is proposed, then the manhole cover will need to be much higher than the surrounding land.

As explained in the handbook if a weir is installed on the edge of the pond then the “minimum earthworks plateau level” would need to be around 200mm higher than the “300mm freeboard level”. The exceedance route from the weir would also need to be shown.

If the concrete weir is installed in a manhole then the pipeline would need to be designed for a blocked hydrobrake. Large pipes may require security screens and so this option may be impractical for a large site such as this.

We note that ponds B1 B2 and B3 will be in POS. If Pond B1 overflows, then water will spill onto Huntington Lane. We note the proposals for ponds B1 B2 and B3 to spill at the same level. It should be possible to install weirs on ponds B2 and B3 and raise up ground levels around pond B1. If a concrete weir is proposed in a manhole then a similar arrangement could be made. At Reserved Matters stage we will request clarity on these proposals and confirmation that there is sufficient space around Pond B1 to raise ground levels.

Owing to the implications associated with incorrect construction, a condition will be imposed requesting the provision of an as-built survey of the balancing ponds and ditches to ensure that the assets have been installed correctly.

Culverts are proposed between Ponds B1,B2 and B3. Through adequate design the culverts need to selected to ensure that there is no likelihood of the culverts blocking. The culverts need to be designed assuming that fly tipping could occur, leading to a blockage. We request clarity on the size of the proposed culverts. Only the sections of watercourse below the highways should be culverted and the remaining lengths left as open sections.

Pond A needs to be designed to ensure that the Minimum Earthworks Plateau Level is high enough to prevent a spillage route occurring into properties in Huntington. The Plateau Level should be no higher than existing ground levels. The alignment of the overflow needs to be considered by the applicant and shown on drawings.

We note that ponds would only fill during periods of heavy rainfall and only for short periods. There is a small risk that groundwater may track through the ground to lower land. The land south of Pond A is slightly lower than the base of the proposed pond.

The Geosmart report highlights the need to consider the likelihood of runoff from the steepened ground sides at the sides of the ponds affecting downhill properties. This issue needs to be considered by the applicant.

We note the proposals to install the ponds with inverts respecting the guidance presented by the Environment Agency, noting that the SPZs may alter.

Detailed drainage drawings and calculations will be required to support the planning application. This will need to include cross sections through the proposed attenuation features that also demonstrate inclusion of 300mm freeboard above the 1 in 100 year + CC 'Design' event flood level and an overflow to manage flows in the event of outfall blockage (refer to Section 8.8 of the Herefordshire SuDS Handbook). The 'Test' scenario also needs to be checked with no requirement for freeboard. These dimensions need to be established at an early stage in the design process

We note that no attenuation features that will store surface water up to the 1 in 100 year + CC event (including public open space etc) are located within areas predicted to be at risk of fluvial flooding during the 1 in 100 year + 37%CC event without inclusion of the Yazor Brook FAS. We note that Appendix F (Revison 7.0) also contains a simulation of the 1 in 100 year + 37%CC event with inclusion of the Yazor Brook FAS.

The above scenarios are the Non Defended simulations. Under previous commentary there was a requirement for a Defended scenario based on more intense rainstorms. This relates to the 1 in 1000 year and 1 in 100 year + 80%CC event taking the Yazor Brook FAS into consideration. These latter scenarios have not been modelled, but could form a part of the Reserved Matter application

In our earlier comments we made specific references to the respective levels of elements of the drainage system. These issues were highlighted because there is a risk that during floods, water will deplete some of the available attenuation storage within the attenuation basins. The available level data presented as part of this outline submission suggests that flood levels will be lower than the basin inverts.

The available data suggests that the outfall to the watercourse can be in excess of 300mm above the bed level. A minimum of 300mm head upstream of the hydrobrake (if proposed) is also likely to be required to achieve the required hydrobrake performance (consequently the start of the outlet pipeline needs to be 300mm below the basin base level).

We note that there are proposals to maintain the site drainage under private ownership. It is noted that under such an arrangement the highways could not be adopted by Herefordshire Council.

We note that there are proposals to ensure water cleanliness, this principle is highlighted particularly by the Environment Agency. however earlier iterations of the Surface Water strategy include reference to below ground storage , we encourage the applicant to utilise green SuDS across the site.

We note that permeable paving (tanked) has been promoted although we are unclear how this would be used unless the Till has some permeability. We note the commitment to complete further infiltration testing, during detailed design

The Environment Agency have made reference to the provision of traditional green SuDS as a means to achieve this aspiration. Our own approach with oil interceptors differs slightly to that of the Environment Agency, we could consider such products suitable for an industrial premises but would agree with the Enviironment Agency that green SuDS are a specific requirement at a strategic site such as Three Elms.

7.11.2023 At Reserved Matters stage a Flood Flow Paths drawing will be required to illustrate the proposed overland flow routes in the event of exceedance/blockage of the surface water drainage system. Flow routes should follow the roads or public open spaces before discharging to Yazor Brook. We recommend that the Applicant looks to avoid providing an overland flow route that passes between development plots, with preference given to the routing of flows within roads and public open space. We also highlight that overland flow routes that direct runoff to the Yazor Brook should be maintained within the site boundary and should not result in overland flow towards the Yazor Brook. This issue needs to be fully considered at Reserved Matters stage.

Foul Water Drainage

We note proposals for a high specification for the sewerage passing through SPZ1. The applicant has suggested that pumping stations may be required, these would need to be adopted by a water company. Where possible pumping should be avoided.

The foul sewer runs south of the Yazor Brook. There are no indications regarding the proposed connection level, nor the depth of the proposed sewer below the bed of the brook.

At reserved matter stage the applicant clarify the proposals for such works. It may be possible to line newly installed pipework, but lining of small diameter pipework may prove impractical.

Conclusion

Policy HD5 of the Core Strategy requires that the applicant considers opportunities to mitigate flood risk in central Hereford.

Item 9.1.21 reads as follows :-

“The provision of flood plain storage within the site will contribute towards mitigating flood risk arising from Yazor Brook in accordance with Policy 5 of the Local Plan”

However Figure 7-9 of the modelling report clearly shows that there will be a Negligible difference between the simulated flood depths.

Item 4.3.2 reads “No further information pertaining how this policy requirement should be achieved is provided”

Accordingly we clarify as follows :-

The applicant should be made aware that the LLFA are currently promoting a project to inspect the culverted sections of the Yazor Brook within Hereford. This project may lead to the need for remedial works on the culvert system. The cost of the project is unknown, government funding had already been acquired to facilitate the survey work. If this planning application is approved then the LLFA will be seeking to acquire private funding for this scheme.

We recognise that at this stage additional soakaway testing has not been completed. There may be some areas of the site where infiltration into the Till is viable and this issue should be further considered as the design evolves. Where possible measures should be taken to reduce the likelihood of low flows in the Yazor Brook.

We note comments suggesting that the drainage infrastructure will remain privately owned. We urge the applicant to consider developing a design that could allow adoption of the respective drainage features so that future generations of residents can live in a community with roads and other infrastructure maintained by statutory authorities.

As LLFA we hold no objections to the Outline application. At Reserved Matters stage a series of conditions will be required, which will be defined on receipt of the information supporting the Reserved Matters application.