

West Sussex County Council
Flood Risk Management Team
Ground Floor
Northleigh
County Hall
CHICHESTER
West Sussex
PO19 1RH

Project ref: 3419

24th October 2023

Dear Sir/Madam

RE: WSCC/021/23 - Recycle Southern Ltd, Elbridge Farm Chichester Road, Bognor Regis, PO21 5EF – Updated response to LLFA comments

A number of comments have been received from the LLFA in relation to the submitted Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (Hafren Water ref 3419/FRA, Final Version F2, April 2023) for the above site.

Following a Teams meeting between the LLFA, Hafren Water and GP Planning on 15th September 2023, it has been agreed that a number of points are not applicable or can be subject to planning conditions. Items agreed with the LLFA are in blue below.

The remainder of the comments have been addressed through an updated FRA (3419/FRA Final version F3, October 2023).

The table below has been taken from the 'Planning Application Technical Response', with an additional column for our comments, the agreed approach or where within the FRA items have been addressed.

| FULL APPLICATION | Related Policy or Standard | Applicant action required | LLFA specific comment | Hafren Water comment |
|-------------------------------------|---|--|--|----------------------|
| All sources of flooding considered? | NPPF Paragraph 159, 167 PPG Paragraph 051 SDNSTS S10 | Provide updated information within an amended FRA on; | The FRA has included adequate information on sources of flood risk | |
| | | <input type="checkbox"/> Fluvial flooding from the ordinary watercourse. | Not applicable | |
| | | <input type="checkbox"/> Surface water flow path originating offsite. | Not applicable | |
| | | <input type="checkbox"/> Groundwater flooding. | Not applicable | |
| | | <input type="checkbox"/> Rainwater surcharged sewer flooding. | Not applicable | |

[https://hafrenw.sharepoint.com/sites/HafrenWater/Shared Documents/General/Projects/Elbridge Farm Recycling Centre \(3419\)/Reports/Response to LLFA/3419_WSCC flooding & drainage \(LLFA\) HW comments V3 \(24-10-23\).docx](https://hafrenw.sharepoint.com/sites/HafrenWater/Shared Documents/General/Projects/Elbridge Farm Recycling Centre (3419)/Reports/Response to LLFA/3419_WSCC flooding & drainage (LLFA) HW comments V3 (24-10-23).docx) Page 1 of 16

| FULL APPLICATION | Related Policy or Standard | Applicant action required | LLFA specific comment | Hafren Water comment |
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| | | <input type="checkbox"/> Historic flood information. | Not applicable | |
| Mitigation not appropriate | NPPF Paragraph 159, 167 and 168 PPG Paragraph 004, 023, 037, 041, 042, 043 and 044 | <input type="checkbox"/> Use sequential approach with the following hierarchy I. how can the development first avoid the risk of flooding II. how will it be mitigated (with evidence) III. how will flood resistance and resilience be employed | Not applicable | |
| | | <input type="checkbox"/> The proposal increases the risk of flooding to existing infrastructure, dwellings or property. Mitigation should be reassessed to show how flood risk can be reduced overall. | Not applicable | |
| | | <input type="checkbox"/> Provide information on safe access and egress as part of an emergency plan. Temporary refuge is no longer acceptable. | Not applicable | |
| Long term sustainability of the development | NPPF Paragraph 167 and 168 | <input type="checkbox"/> Provide site specific ordinary watercourse or surface water flow path modelling. | Not applicable | |
| | PPG Paragraph 004, 036, 061, 068 and 069 | <input type="checkbox"/> Demonstrate that any residual risk is managed with appropriate flood resistance and resilience measures. | Not applicable | |
| | | <input type="checkbox"/> Include evidence of appropriate freeboard to finished floor | Not applicable | |

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| | | levels from the design flood level. | | |
| | | <input type="checkbox"/> Include appropriate climate change allowance for assessment of the lifetime of the development (including the 3.33% AEP design flood event). | Not applicable | |
| | | <input type="checkbox"/> Use up to date FEH2022 rainfall data for all design flood events. | Not applicable | |
| | | <input checked="" type="checkbox"/> Provide an easement of 3 m from the top bank of any watercourse is required for maintenance. | Objection: The applicant should provide a site plan which shows a 3m easement from the Elbridge Rife adjacent to the site | <p>There is no built development within 3 m of the top of the bank of the Elbridge Rife, however existing hardstanding extends to the top of bank. Therefore, access for maintenance is not possible from the site.</p> <p>To the north of the Elbridge Rife is open grassland where ready access for maintenance is possible.</p> <p>It was agreed with the LLFA on 15/09/23 that a 3m easement does not need to be provided on the site side.</p> |
| | | <input checked="" type="checkbox"/> Identification is required of those structures which require consent for works on an ordinary watercourse (from the LLFA), this extends to works required within 8m from the top of the bank (see | Objection: Consent is required from the LLFA for works within 8m of the Elbridge Rife. | <p>No new development is proposed within 8 m of the watercourse. The outfall structure into the Elbridge Rife is existing and will not be replaced.</p> <p>An 8m buffer from the watercourse will be shown on a drawing.</p> |

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| | | West Sussex LLFA website) | | |
| How does the site currently drain? | NPPF Paragraph 169 PPG Paragraph 059 SDNSTS S1, S2, S3, S4, S5, S6 | <input checked="" type="checkbox"/> Evidence required on ground conditions / BRE365 or similar infiltration testing / dissolution potential / seasonally high groundwater levels. | Objection: The Drainage Strategy proposes to discharge to the adjacent Elbridge Rife and infiltrate via the existing permeable surfaces and additional swale, however BRE356 infiltration testing should be carried out to confirm if infiltration is viable. The Drainage Strategy also suggests that an indeterminate amount of infiltration occurs within the French drains, however testing should confirm the infiltration rates to demonstrate how much infiltration contributes to the drainage strategy. | It is not proposed to dispose of surface water run-off via infiltration techniques for impermeable surfaces due to the nature of the sub-surface. Existing filter drains will be re-used; however these have currently assumed no infiltration to represent a worst-case scenario. It is not proposed to alter the drainage characteristics of the permeable area of the site in the east. Therefore, this area will continue to either infiltrate or flow overland into the Elbridge Rife as per the existing situation. Therefore, it is not deemed necessary to carry out infiltration testing in this instance. It was agreed with the LLFA on 15/09/23 that infiltration testing does not need to be carried out, as the drainage design assumes no infiltration. |
| | | <input checked="" type="checkbox"/> Greenfield runoff rates and volumes missing. | Objection: Greenfield volumes have not been provided. | Section 7.2.3 of the FRA |
| | | <input checked="" type="checkbox"/> Greenfield runoff rates need to be recalculated (incorrect input parameters). | Objection: Evidence should be provided to show that the greenfield runoff rates have been | Section 7.2.3 of the FRA |

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| | | | calculated correctly for the full site area. | |
| | | <input checked="" type="checkbox"/> Pre-development brownfield runoff rates missing. | Objection: Should be provided. | Section 7.2.2 of the FRA |
| | | <input checked="" type="checkbox"/> Pre-development brownfield runoff rates need to be recalculated (incorrect input parameters). | Objection: Evidence should be provided to show that the brownfield runoff rates have been calculated correctly for the full site area | Section 7.2.2 of the FRA |
| | | <input checked="" type="checkbox"/> Drawing required to show where existing drainage network and outfall/s are, plus confirmation if will they be retained or removed. | Objection: The Drainage Strategy does not confirm if the outfall will be retained or if a new outfall will be required. | Drawing 3419/FRA/05 within the FRA. |
| | | <input checked="" type="checkbox"/> Drainage survey required to provide evidence of existing discharge rate and condition (may include detailed asset or CCTV survey | Objection: Should be provided. | We believe this can be addressed by a planning condition. Should the existing drainage network be in an unsatisfactory condition, it will be repaired/maintained/replaced, as necessary. It was agreed with the LLFA on 15/09/2023 that this can be addressed by a planning condition. |
| Where will the site drain to? | NPPF Paragraph 169 PPG Paragraph 055, 056, 059, 060, 061, 062 and 063 | Drainage location hierarchy has not been followed, further information is required on; <input type="checkbox"/> Evidence why rainwater reuse can't be included. | Not applicable | |

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| | SDNSTS S12, 13 and S14 | | | |
| | | <input checked="" type="checkbox"/> Interception has not been calculated and/or provided. | Objection: Interception has not been included within the Drainage Strategy. | We believe this can be covered by a planning condition. It was agreed with the LLFA on 15/09/2023 that this can be addressed by a planning condition. |
| | | <input type="checkbox"/> Infiltration proposals – re Groundwater Source Protection Zone I restrictions. | Not applicable | |
| | | <input checked="" type="checkbox"/> Surface watercourse – does it connect to the wider network and is there permission and agreed access locations for proposed outfalls? | Informative: The applicant should confirm permission and agreed access to discharge to the Elbridge Rife. | It is proposed to re-use an existing outfall into the Elbridge Rife. Therefore, this is not considered to be necessary. It was agreed with the LLFA on 15/09/2023 that this is not necessary. |
| | | <input type="checkbox"/> Surface water sewer – no in principle agreement from owner of the asset. | Not applicable | |
| | | <input type="checkbox"/> Combined sewer – no in principle agreement from owner of the asset. | Not applicable | |
| | | <input type="checkbox"/> Full impact assessment of failure and emergency procedures required if a pump is part of the design. | Not applicable | |

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| | | <input type="checkbox"/> Justification is required as to why a deep bore infiltration feature has been proposed prior to shallow infiltration or connection to a surface watercourse. | Not applicable | |
| | | <input type="checkbox"/> In principle objection - proposing to connect surface water runoff to foul sewer. | Not applicable | |
| | | <input type="checkbox"/> Detailed justification required why the application cannot be drained via gravity and a pump is required. | Not applicable | |
| Are the 4 pillars of SuDS provided and are they multifunctional? | NPPF Paragraph 169 PPG Paragraph 036, 055, 056, 059, 060, 061, 062 and 063 | <input checked="" type="checkbox"/> The application must provide water quantity benefits in open, at the surface or above ground SuDS. | Objection: A swale has been included within the drainage strategy, however it is not clear how this connects to the network. | It is considered that there is no requirement for a swale, or other SuDS feature in this location. |
| | | <input type="checkbox"/> The application must provide water quality benefits. | Not applicable | |
| | | <input checked="" type="checkbox"/> Appropriate water quality assessment is absent/incorrect. | Objection: The drainage strategy includes an existing oil interceptor, however the applicant should refer to the simple index approach for assessing water quality as per the CIRIA SuDS Manual. | Section 7.2.7 of the FRA |

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| | | <input type="checkbox"/> Additional water quality treatment using surface SuDS is required due to the sensitivity of the discharge location (including groundwater, designated surface watercourses or deep infiltration features). | Not applicable | |
| | | <input checked="" type="checkbox"/> The application must provide biodiversity benefits or demonstrate why this is not achievable (lack of space will not be accepted). | Objection: Biodiversity has not been considered within the drainage strategy to demonstrate how the Scheme meets the four pillars of SuDS. | Section 7.2.8 of the FRA |
| | | <input checked="" type="checkbox"/> The application must provide amenity benefits or demonstrate why this is not achievable (lack of space will not be accepted). | Objection: Amenity has not been considered within the drainage strategy to demonstrate how the Scheme meets the four pillars of SuDS. | Section 7.2.9 of the FRA |
| How will the site drain without adversely effecting flood risk elsewhere? | NPPF Paragraph 167, 169 SDNSTS S2, S3, S4, S5, S6 | <input checked="" type="checkbox"/> The most precautionary infiltration rate should be used in the design of the attenuation feature. | Objection: Infiltration rates have not been provided. | As above, infiltration testing is not considered to be necessary in this instance. Agreed with the LLFA on 15/09/2023. |
| | | <input checked="" type="checkbox"/> Infiltration rates are shown to be favourable and should be used in the drainage design (where appropriate). | Objection: Infiltration rates have not been provided. | As above, infiltration testing is not considered to be necessary in this instance. Agreed with the LLFA on 15/09/2023. |

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| | | <input type="checkbox"/> Infiltration storage drainage design should be recalculated to either only discharge through the sides of the structure or apply the appropriate factor of safety. | Not applicable | |
| | | <input checked="" type="checkbox"/> Infiltration drainage storage has half drain down time greater than 24 hours and an alternative design or mitigation is required. | Objection: Half drain times have not been provided. | This is not necessary as the drainage strategy has assumed no infiltration. Agreed with the LLFA on 15/09/2023. |
| | | <input checked="" type="checkbox"/> The post development 100% AEP (or 1 in 1 year) rainfall event runoff rate should also be controlled to the equivalent pre-development rate. | Objection: The pre-development rates have not been provided. | Sections 7.2.3 and 7.2.4 of the FRA |
| | | <input checked="" type="checkbox"/> Proposed discharge rates and volumes are greater than greenfield with no justification. | Objection: The proposed discharge rates should be limited to Qbar or 2l/s/ha | All storm events limited to QBAR rate of 3.5 l/s. |
| | | <input type="checkbox"/> Proposed discharge rates include future allowances for climate change and / or urban creep. These must be removed, and all calculations resubmitted. | Not applicable | |
| | | <input checked="" type="checkbox"/> Require justification and supporting calculations for brownfield % betterment and why this can't be closer to the predevelopment | Objection: The proposed discharge rates should be limited to Qbar or 2l/s/ha | All storm events limited to QBAR rate of 3.5 l/s. |

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| | | greenfield scenario. | | |
| | | <input type="checkbox"/> Proposed discharge rates would increase flood risk elsewhere and need to be re-assessed. | Not applicable | |
| | | <input type="checkbox"/> A minimum runoff rate of 1 to 2 l/s/ha should be applied in groundwater dominated areas. | Not applicable | |
| | | <input checked="" type="checkbox"/> How will the development not increase the volume of runoff as only pre and post calculations of greenfield runoff rate have been provided? | Objection: Runoff volumes | Section 7 of the FRA. |
| | | <input checked="" type="checkbox"/> A complex control for runoff rate with long term storage provided, is required, if the drainage proposal is not limiting runoff to QBAR or 2 l/s/ha. | Objection: The proposed discharge rates should be limited to Qbar or 2l/s/ha | All storm events limited to QBAR rate of 3.5 l/s. |
| | | <input checked="" type="checkbox"/> Include appropriate climate change allowance for the lifetime of the development (including 3.33% AEP design) for storage volumes. | Objection: Climate change allowances have not been included for the 3.33% AEP event. | Climate change has been applied to the 3.33% and 1% storm events. |
| | | <input type="checkbox"/> Calculations should be resubmitted and demonstrate how 10% urban creep has been included in the volume of SuDS storage required. | Not applicable | |

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| | | <input checked="" type="checkbox"/> Use up to date FEH2022 rainfall parameters in any modelling scenarios. | Objection: The calculations currently use FSR and should be updated to use FEH2022 as FSR significantly underestimates the volume of rainfall. | FEH2022 data has been incorporated into the InfoDrainage model. |
| Location of SuDS | | <input checked="" type="checkbox"/> Drawings need to show all the drainage features (storage and conveyance) with labels the same as those in supporting calculations. | Objection: The drainage layout is not labelled and cannot be cross-referenced to the calculations. | Drawing 3419/FRA/05 within the FRA has been updated. |
| | | <input type="checkbox"/> Drawings need to show the final design (but not construction issue or preliminary issue). | | |
| | | <input checked="" type="checkbox"/> Cross sections and long sections of all the network and structures such as ponds, basins and swales. | Objection: No cross section drawings of the network have been provided. | See Appendix 3419/FRA/A6 within the FRA. |
| What is the impact of flood risk on the development? | NPPF Paragraph 169 SDNSTS S7, S8, S9, S10 and S11 | Updated supporting calculations required to show; | | |
| | | <input checked="" type="checkbox"/> 50% AEP rainfall event does not surcharge in the drainage network. | Objection: The 50% AEP event has not been provided. | InfoDrainage Results and Section 7.2.4 of the FRA. |
| | | <input checked="" type="checkbox"/> 3.33% AEP rainfall event plus climate change does not flood outside the drainage network which is designed to hold water. | Objection: Climate change allowances have not been included for the 3.33% AEP event. | A climate change allowance has been incorporated into the InfoDrainage model. |
| | | <input checked="" type="checkbox"/> 1% AEP rainfall event plus climate change does not leave the application boundary or flood any part of a | Objection: A plan should be provided to show where the flooded volume will be held on site from the 1% | See Drawing 3419/FRA/06 within the FRA. |

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| | | building, utility plant susceptible to water (e.g. pumping station or substation) within the development boundary. | AEP event plus climate change. | |
| | | <input checked="" type="checkbox"/> the appropriate climate change allowance must be included. | Objection: Climate change allowances have not been included for the 3.33% AEP event. | Climate change has been applied to the 3.33% and 1% storm events. |
| | | Additional information is required showing; | | |
| | | <input checked="" type="checkbox"/> above ground flooding (extent and depth) at the 1% AEP rainfall event plus climate change must be shown on a drawing with proposed external ground levels and proposed finished floor levels of buildings. | Objection: A plan should be provided to show where the flooded volume will be held on site from the 1% AEP event plus climate change. | See Drawing 3419/FRA/06 within the FRA. |
| | | <input checked="" type="checkbox"/> above ground flooding (extent and depth) at the 1% AEP rainfall event plus climate change should be designed to be held in the least vulnerable areas of the site e.g. open space. | Objection: A plan should be provided to show where the flooded volume will be held on site from the 1% AEP event plus climate change. | See Drawing 3419/FRA/06 within the FRA. |
| | | <input checked="" type="checkbox"/> Flood resistance and resilience must be shown to be included in the design. A minimum of 300 mm must be provided between the design flood event and the finished floor level. | Objection: This has not been included within the design. | We believe this can be covered by a suitable planning condition. It was agreed with the LLFA on 15/09/2023 that this can be addressed by a planning condition. |

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| | | <input checked="" type="checkbox"/> A minimum of 150 mm above external ground levels and show that they are sloping away from vulnerable areas such as doorways. | Objection: This has not been included within the design. | <p>We believe this can be covered by a suitable planning condition.</p> <p>It was agreed with the LLFA on 15/09/2023 that this can be addressed by a planning condition.</p> |
| | | <input checked="" type="checkbox"/> Exceedance of the design 1% AEP rainfall event plus climate change (or failure of the drainage network) must be shown on a drawing, minimising impacts to people and property. This drawing will include proposed external ground levels, finished floor levels and any designed slopes on impermeable surfaces such as highways or car parks | Objection: This has not been provided. | <p>See Drawing 3419/FRA/07 within the FRA.</p> |
| | | <input checked="" type="checkbox"/> ½ drain down times need to be submitted and show that they are within 24 hours (or within 48 hours for features that are lined e.g. lined tanks or lined basins). | Objection: Half drain times have not been provided. | <p>As above, this is not necessary.</p> <p>Agreed with the LLFA on 15/09/2023.</p> |
| | | <input checked="" type="checkbox"/> Any drainage network showing storage features with ½ drain down time greater than the 24 hours (or 48 hours for lined structures) must be redesigned to show how it can meet this standard or be | Objection: Half drain times have not been provided. | <p>As above, this is not necessary.</p> <p>Agreed with the LLFA on 15/09/2023.</p> |

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| | | increased in size to accommodate a subsequent storm event of 3.33% plus climate change allowance. | | |
| | | <input checked="" type="checkbox"/> The drainage calculations must be shown to include a surcharged outfall to a watercourse or sewer. This surcharge level must be the 1% AEP flood event of the receiving watercourse if known or bank full if not already hydraulically modelled. | Objection: This has not been provided. | A surcharged outfall has been modelled. See Section 7.2.5 and Appendix A5 of the FRA. |
| How will the drainage and watercourse features be managed and maintained? | NPPF Paragraph 169 PPG Paragraph 055, 057 and 058 SDNSTS S10, S11, S12, S13 and S14 | <input type="checkbox"/> Details of required maintenance of any SuDS features and structures and who will be adopting these features for the lifetime of the development. | Not applicable | |
| | | <input type="checkbox"/> A high-level assessment of how water quantity and water quality will be managed during the construction phase is required. Identifying high level assumptions such as need to discharge to a sewer or watercourse will appropriate pollution measures. | Not applicable | |

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| | | <input checked="" type="checkbox"/> Appropriate easements (to the adopting authority standard) to SuDS features should be shown on a drawing, this will be a minimum of 3m. | Objection: The drawings have not included an easement of 3m to the SuDS features. | It was agreed with the LLFA on 15/09/23 that a 3m easement does not need to be provided on the site side. |
| | | <input type="checkbox"/> Vehicular access route and off-road parking needs to be provided to ponds, basins and swales. | Not applicable | |
| | | <input checked="" type="checkbox"/> Provide an easement of a minimum of 3 m from the top bank of any watercourse is required for maintenance of the watercourse. This should be on both banks but justification should be provided if access is proposed from only one side of the bank or less than 3m (e.g. 2.5 times the width of any plant likely to be used (from the top of bank with maintenance plant parallel to the watercourse)). | Objection: The applicant should provide a site plan which shows a 3m easement from the Elbridge Rife adjacent to the site. | It was agreed with the LLFA on 15/09/23 that a 3m easement does not need to be provided on the site side. |
| | | <input type="checkbox"/> Due to the likely long duration build out time (including phased development proposals), a construction management plan and supporting calculations and drawings are required to show a timeline of how | Not applicable | |

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| | | temporary measures will be put in place to protect the water environment and any newly built SuDS features. This will include any temporary water quality and flow control devices | | |
| Other | | <input checked="" type="checkbox"/> Bespoke advice | The calculations show the site divided into 3 catchments. We would request that the applicant provide a drawing layout of the 3 catchments. | See Drawing 3419/FRA/05 within the FRA. |

Regards,



Charlotte Hale
Senior Flood Risk Consultant