LLFA CONSULTATION RESPONSE

Reference:	FUL/2024/0022
Location:	Land between the A1270 Broadland Northway near Ringland and the A47 near Honningham
Applicant:	Highways Team Norfolk County Council
Proposal:	Development of approximately 6km of the Norwich Western Link Road connecting the A1067 (Fakenham Road) with the new A47 North Tuddenham to Easton scheme (being developed by National Highways), including the construction of a new roundabout junction with the A1067 Fakenham Road, improvements to the A1067 Fakenham Road and the roundabout junction with the A1270 Broadland Northway. Structures include a new viaduct carrying the Norwich Western Link over the River Wensum, a new underpass at Ringland Lane, the provision of a green bridge carrying the Broadway over the Norwich Western Link, three further green bridges, wildlife crossings, and culverting of a tributary to the River Tud. Related works include the stopping up, diversion, improvement and provision of side roads, new walking cycling and horse-riding provision, the stopping up, replacement and provision of new private means of access, and ancillary landscaping, ecological mitigation, surface water drainage system, flood compensation, bunds, other environmental mitigation, diversion and protection of apparatus and temporary works to facilitate construction, and the change of use of the premises known as Low Farm as offices (class E), and other ancillary works.

Documents Reviewed

The LLFA has reviewed the various documents as listed below:

- Chapter 1: Introduction
- Chapter 2: Existing Site
- Chapter 3: Description of the Proposed Scheme
- Appendix 3.1: Outline Construction Environmental Management Plan
- Chapter 5: Approach to EIA
- Appendix 5.2: Environmental Impact Scoping Opinion
- Chapter 12: Road Drainage and the Water Environment
- Appendix 12.1: Drainage Network Water Quality Assessment
- Appendix 12.1: Routine Runoff on Surface Water Quality Data
- Appendix 12.2: Flood Risk Assessment
- Appendix 12.2a: Figures
- Appendix 12.2e: Foxburrows Hydraulic Modelling Report
- Appendix 12.2f: Foxburrows Technical Modelling Log
- Appendix 12.2g: Foxburrows FEH Calculation Record
- Appendix 12.2h: Ringland Lane Hydraulic Modelling Report
- Appendix 12.2i: Ringland Lane Technical Modelling Log
- Appendix 12.2j: Ringland Lane FEH Calculation Record

- Appendix 12.6: Consultation
- Appendix 12.8: Study Area Figure

- Composite Finished Ground Level Plan (With Scheme) Key Plan
- Composite Finished Ground Level Plan (With Scheme) Sheet 1 to 5
- Topographic Survey Plan (Without Scheme)

- Drainage Strategy: Main Report
- DS Appendix 1: Interpretation of infiltration values from the ground investigation report
- DS Appendix 2: Third Party Liaison
- DS Appendix 3: Rainfall data set application
- DS Appendix 4: Study of scour protection methods and product data sheet for Flex MSE
- DS Appendix 5: MicroDrainage Calculations
- DS Appendix 6: Ditches and Piped Ditches Calculations
- DS Appendix 7: Greenfield runoff rate estimation for sites
- DS Appendix 8: Technical Note: NDR Basin 1A Drainage Analysis
- DS Appendix 9: Ringland Lane Flood Modelling Report
- DS Appendix 10: Basins Options Technical Note
- DS Appendix 11: Topsoil for Infiltration Basins Technical Note
- DS Appendix 12: Landscape Amenity Proposals
- DS Appendix 13: A47 / NWL Roundabout Design Technical Note and A47 Stub presentation
- DS Appendix 14: Ground Investigation Reports
- DS Appendix 15: Construction Surface Water Drainage Strategy
- DS Appendix 16: Drainage Strategy Drawings & HCD Standard Details

- Drainage Plans:
- Drainage Key Plan
- Drainage Layout Sheet 1 to 10
- Basin Layout Sheet 1 to 7
- Exceedance Flow Plan 1 to 2
- Drainage Outfall Details to Ordinary Water Course 1 to 3
- Drainage Typical Details 1 to 6
- Drainage Catchment Plan
- Highway Drainage Catchment Areas Key Plan
- Highway Drainage Catchment Areas Plan Sheets 1 to 5
- Pre-Development Catchment Plan
- Drainage Piped Ditches Sheets 1 to 3

Recommendation

At present, the LLFA require further information to demonstrate that the proposed development complies with our local SuDS Standards and national guidance and policy. The LLFA considers the application lacks satisfactory information relating to the drainage strategy for the infill development that relates to:

- The demonstration that the development is in accordance with National Planning Policy Framework (NPPF) with regard to the risk of flooding. There is currently insufficient and unclear information provided to demonstrate that surface water can be managed on the site and discharged to either ground or surface water without resulting in an increase in the risk of flooding elsewhere. Therefore, the application has not demonstrated that there is an achievable surface water drainage proposal for this application.
- The LLFA note the FRA presented has undertaken part of the FRA using the LA 113 method of assessment rather than the NPPG method of assessment. Therefore, the application has not demonstrated that there is no increase in flood risk for this application.
- The application lacks Flood Exceedance Flow Route Plans for the whole scheme and a construction phasing plan.

Reason
To prevent flooding in accordance with National Planning Policy Framework paragraph 173, 175 and 180 by ensuring the satisfactory management of local flood risk, surface water flow paths, storage and disposal of surface water from the site in a range of rainfall events and ensuring the SuDS proposed operates as designed for the lifetime of the development.

Further detailed comments can be found below. The LLFA recommends that the Flood Risk Assessment and Drainage Strategy are updated rather than piecemeal information being submitted which is difficult to review efficiently, making it difficult to refer the Planning Authority to pertinent information. This is in accordance with the LLFA Developer Guidance.

The Norfolk LLFA advice and guidance that is referred to can be found at https://www.norfolk.gov.uk/rubbish-recycling-and-planning/flood-and-water-management/information-for-developers.

LLFA Detailed Comments

Chapter 2: Existing Site
In Table 2-1 in the Water Environment section, there is only consideration of the rivers and associated fluvial flooding there is no consideration of the local surface water network or significant surface water flow paths. Furthermore, there is no consideration of features such as ponds. **Therefore, the LLFA is concerned the baseline site description is limited in its consideration and seeks confirmation regarding the presence or absence of ponds,**

the local surface water drainage network and existing surface water flow paths, or better referencing to where this information can be found.

On review of Figure 2-1, the LLFA is not clear on whether this plan is showing the pre or post development constraints. As Chapter 2 is focused on the existing site, it is not clear why the proposed development is shown at this time. Again, there is no consideration of the surface water flow paths, local surface water network or ponds on this figure. Therefore, it is not possible to determine whether there is none or whether it has not been reported upon. There is also a bright blue feature on the figure that is not identified in the key. It is not possible to confirm from the information given in the figure what this is depicting. The River in the southern corner of the figure is not labelled. **The applicant is requested to confirm whether this is the River Tud or not.**

Chapter 3: Description of the Proposed Scheme
In section 3.4.29, there is mention of an agricultural bypass should it be necessary to close Honingham Lane. It is not clear to the LLFA if this is a temporary or permanent structure or whether there will be an increase in the impermeable area that will require surface water drainage (either temporarily or permanently). **Further information is requested.**

In section 3.4.48, the proposed change of use of Low Farm from residential into a site office is unclear whether this is an increase in impermeable area or is this a change of use. **The LLFA require clarification.**

In Table 3-2 which identifies the embedded mitigation measures, there is no discussion relating to the mitigation of surface water runoff from the extensive construction compounds associated with the site. **Further information is required to demonstrate that surface water runoff from this temporary impermeable area will not increase flood risk.**

In section 3.5.2 to 3.5.4 on the construction access haul roads, there is no mention of surface water management to prevent an increase in flood risk during the prolonged construction works. In addition, section 3.5.6 identified there will be three main construction phase welfare and car park areas supported by a further 4 satellite welfare areas. Again, there is no mention of surface water management to prevent an increase in flood risk during the prolonged construction works. **Further information is required for these temporary structures.**

In section 3.5.31, there is a discussion on the decommissioning approach although this appears to focus on the permanent structures. The decommissioning discussion on the temporary works limited and appears to be partly integrated into the discussion on the different temporary construction features. For example, the removal of the temporary viaduct platform would be removed. However, there is no discussion on the removal of the haul roads other than the temporary viaduct haul road which would form the permanent access track. **The LLFA require more details regarding the decommissioning the temporary construction facilities and the surface**

water management is needed to ensure there is no increase in flood risk.

Appendix 3.1: Outline Construction Environmental Management Plan
The Outline Construction Environmental Management Plan is not clear from the information provided whether or not there is the inclusion of surface water management activities for the construction temporary works areas such as contractor compounds and haul roads. **Further information is required to clarify this point.**

Chapter 5: Approach to EIA

The main rivers section focuses on the baseline water quality. There is no notable information on flood risk or existing road drainage consideration. While in the Other Surface Water Features section (10.3.9-10.3.11) there is the identification of two surface water flow paths. **However, there is no cross reference to the flood risk section of the chapter, which would be requested by the LLFA for clarity.**

There is no comment on whether sewer flood risk is considered or the location of the tidal extent to confirm whether tidal flood risk should be considered or not. **Further information is required.**

In section 10.4 for the operation phase, the applicant has identified the risk cutting and attenuation pond seepage that could result in the need to undertake dewatering activities due to the construction of embankments and pre-earthworks drainage which could interfere in the local groundwater flows and levels, increasing flows in some catchments with associated reductions elsewhere. Based on this description, the LLFA would suggest these are residual risks as they are risks that arise due to the embedded mitigation measures. **The LLFA requests this information is appropriately updated to reflect this.**

In section 10.5 on mitigation for both the construction and operational phases various measures were identified. A CEMP was identified as necessary to management the co-ordination of various construction phase mitigation measures. It also identifies the need for both land drainage ordinary watercourse consents and Environment Agency environmental permitting requirements, although these are not mitigation measures. There is some acknowledgement of a potential impacts to catchment hydrology and flow in existing watercourses. However, there is no consideration of the increase in surface water runoff from construction works and activities and how this will be managed in this section. **The LLFA requests this further consideration is provided.**

In section 10.7 the applicant confirms the method for assessing the environmental impacts of the scheme during the construction and operational phases will include the preparation of a flood risk assessment supported by appropriate hydraulic modelling. Although this predominately focuses on the fluvial flood risk from the operational phase rather than the surface water

runoff from the construction and operational phases. The applicant indicates in section 10.8 the surface water drainage design was not available at the time of preparing the EIA scoping report. **However, the LLFA suggests this should not prevent the identification of key significant risks.**

Chapter 12: Road Drainage and the Water Environment (Document Ref. 3.12.00)

In section 12.3.3, the applicant identifies that "Table 12-2 accounts for any regulatory consultation undertaken in support of the preparation of this assessment and outlines where this is addressed in the chapter". However, on review of Table 12-2 the only comments that were listed and responded to were those from the Environment Agency. Yet previously in section 12.3.1, the applicant indicates that "Appendix 12.6 Road Drainage and the Water Environment Consultation (Document Reference: 3.12.06); provides a summary of the consultation activities undertaken in support of the preparation of this assessment and supporting appendices." On review of the consultees in given in appendix 12.6, it is noted that there are a number of other consultees. **The LLFA queries the lack of consideration of other statutory consultees response and requires justification of the applicant's focus on the Environment Agency's responses alone.**

The LLFA is unclear about the statement in section 12.3.4 which states that "The following elements are considered to have the potential to give rise to likely significant effects during construction of the Proposed Scheme and have therefore been considered within this assessment:" However the subsequent list provided is a list of the likely significant effects rather than the elements. The LLFA is unclear about whether the applicant intended to provide a list of elements or whether a list of significant effects was intended. Either way the LLFA notes that no list of construction works elements causing these impacts has been provided beforehand, making the list of significant effects abstract and giving the appearance of being generic. **The same issue has arisen in the operation phase in section 12.3.5.**

There are a number of unclear or overly generic statements in the section on the 'Extent of the Study Area' in section 12.3.7. For example, "The assessment of direct effects encompasses surface water features up to 1km from the Site Boundary. The other areas within the Red Line Boundary, located beyond the Site Boundary, have been considered qualitatively and it has been concluded that there are no significant effects which merit further assessment and as such these are not considered further beyond those which are considered in Appendix 12.2: Flood Risk Assessment (Document Reference: 3.12.02)." It is not clear in this text what assessment has been undertaken where, as there appears to be a conflict in the information provided. For example, "The other areas within the Red Line Boundary, located beyond the Site Boundary" is not clear whether this is inside the redline boundary or not. In addition, there is also a rapid jump to the conclusions that does not explain what effects have been considered and what the evidence is to support the conclusion. The reference is to the Flood risk assessment, yet a significant amount of the Chapter 12 assessment will

consider the water environment risks rather than solely the flood risks. A flood risk assessment is not normally the main point of reference for evidencing the impacts and assessment of water quality impacts. The study area extent for this Road Drainage and Water Environment chapter would need to have considered the water quality element in defining the study area. It is very likely that you have already undertaken this work, however there is no reference to it. **A better explanation is needed.**

It is not until the reader reaches section 12.3.10 there is mention of Appendix 12.8: Study Area Figures. On review of Figure 12-1, the LLFA notes there are a number of isolated redline areas that are beyond the study area extents. It is not clear what these areas are. It is also not clear from the information provided in section 12.3.7 to 12.3.11, why these are not included in the study area. **The LLFA requires further information and evidence justifying the approach.**

The LLFA notes that a number of the watercourse condition and other surveys were undertaken in a period of noticeable low flow in 2022. **The LLFA query whether this has been accounted for in the assessments.**

The LLFA notes that in section 12.4.38, the applicant states that "Along the reach of interest, no flood incidents have been reported." The LLFA takes the opportunity to remind the applicant that while the immediate area to the proposed development may be the focus of interest, other areas along the watercourse may be of interest should there be an increase in flood risk in accordance with NPPF. **The LLFA requests further consideration.**

In section 12.4.41, a new model is identified for Foxburrow Stream but no summary of the results is provided in this section. **The LLFA requires a summary of the new models results would be appropriate and would be in keeping with the information provided for the River Wensum.**

In section 12.4.42, the LLFA notes reference to surface water runoff occurring due to soil saturation, although there is no mention of poor infiltration due to soil type and material which occurs more frequently. **The LLFA recommend this is amended to mention this cause of surface water runoff.**

In section 12.4.43, the LLFA notes there is no discussion on the level of flood risk specifically related to either the Ringland Lane or Weston Road surface water flow paths. **Further information is recommended to define the base level of flood risk in this summary.**

The LLFA notes that in Table 12-7, the flood risk indicators are not provided for a number of the receptors listed. **An appropriate consideration of the flood risk is required to be included especially when the floodplain or flood extent is associated with the identified receptor.**

Furthermore, one receptor titled 'Third Party Flood Risk Receptor' is unclear about what the receptor actually is. **Clearer definition of the receptor is**

required otherwise it is not possible to appropriately attribute a sensitivity.

In section 12.6.1, the LLFA notes the discussion in the bullet points for the construction phase. However, there again is no discussion on the management of surface water runoff from the temporary construction areas. As the temporary structures could be place for at least 3 years their surface water runoff will need to be managed. **Further information is required to address this matter.**

In Table 12-8 in the River Wensum Sedimentation, the applicant states "The effects of sedimentation in construction runoff would reduce shortly after completion of the works when exposed areas of earth are resurfaced, reseeded or replanted." As with all vegetation cover establishment, the benefit of the reseeding and replanting is not realised until suitable growth has occurred. The rate of growth will depend in part on the time of year. This should be considered in the assessment. **Further consideration in the work is required.**

In Table 12-8, there is no discussion or consideration around the management of increased surface water runoff rate and volume and its impact on flood risk. While in Table 12-9, some consideration and discussion has occurred although this is again in relation to sedimentation rather than in relation to surface water runoff rate and volume. The LLFA raises the same concerns in relation to Table 12-10 and Table 12-11**. Further consideration and discussion required on this matter.**

In Table 12-10, the LLFA notes the applicant has identified that sedimentation could be caused by "surface water runoff containing elevated levels of suspended particles that may result from land clearance, excavation, dewatering of excavations, wheel washings, areas of bare earth, construction materials". The LLFA is concerned as many of these sources of sediment are normally to be managed and mitigated against in the OCEMP. The LLFA is concerned the risk from the surface water flood flow path is potentially not being as actively managed as other receptors and could result in a higher level of risk and residual risk occurring. **Further work and consideration is required.**

In Table 12-12, the applicant identifies the sensitive receptor as "Third party flood risk receptors (Low to High Sensitivity)". However, the third party receptors are often not clearly identified. At present the only clearly identified receptors are the golf course and gas main on the River Wensum. Elsewhere it is not clear what the third party receptor is, rather it is a general high level discussion on potential effects along a watercourse or flow route. The applicant makes statements like "Appendix 12.2: Flood Risk Assessment demonstrates that the construction works will have a negligible increase in flood risk to third party receptors" yet there is no indication what these receptors are. **Further information is required.**

Again, in Table 12-12, the applicant has not fully identified the receptors of the potential effects clearly in the Management of Overland Flows section. The management solution is identified (the use of PEDs for managing the upstream catchment runoff), however, no receptors are identified so it is not possible to understand whether or not "the construction works will have a negligible increase in flood risk to third party receptors." **Further information identifying these receptors is required.**

In addition, there is no consideration of discharges from dewatering activities during construction and the potential effects they could have on the management of overland flow. **Further consideration and information is required.**

In Table 12-19, the applicant indicates the HEWRAT assessment was passed without mitigation being required and states the mitigation is additional. However, there is no comment of what the additional mitigation has been included to clarify for the reader. **The LLFA recommends the type of mitigation is summarised in this section to improve understanding and evidence the statement.**

In Table 12-19, the applicant is planning to both remove and include structures within the watercourse. These will require ordinary watercourse consenting from the appropriate risk management authority. In addition, it is unclear around the potential effect on the watercourse due to a contradiction in the summary text. The applicant states that "The hydraulic modelling of Foxburrows Stream indicated a negligible change in fluvial dynamics between the baseline and operation." The report then goes on to state "The sensitivity of the Foxburrow Stream is Medium and the magnitude of impact, prior to mitigation, is Slight Adverse. Therefore, there is likely to be a direct, permanent, long term Slight effect (not significant) on the Foxburrow Stream prior to the implementation of additional mitigation measures." It is not clear whether the hydraulic model is assessing the operational stage with or without the proposed mitigation measures in the channel or just the proposed culvert. **The LLFA requests further clarification on this matter.**

Table 12-21 appears to be the operational consideration of the equivalent receptors in Table 12-12. The receptors are better identified in Table 12-21 than in Table 12-12, although it appears that in many cases different receptors are identified. For example, in the River Wensum and Floodplain section of Table 12-12 a golf course and gas main were identified as receptors. However, in Table 12-21, only agricultural land and a proposed scheme access track are identified. While in the Foxburrow Stream and the changes in catchment hydrology section no third party flood risk receptors are identified yet there sensitivity and the magnitude of the impact are assessed to identify the effect. It is not clear what is being affected. While in the Overland Flows section of Table 12-21, the Keeper and the Dell is identified with the scheme stated to "decrease flood depths" in all modelled events, yet in Table 12-12 there is no mention of the Keeper and the Dell. These inconsistencies in the assessment of the receptors make it difficult to determine what has been assessed and whether all the receptors have been

considered throughout the lifetime of the proposed scheme. **Further work and clarification is required.**

In section 12.6.4 and the subsequent Table 12-26, there appears to be uncertainty in the wording for the likelihood of climate change impacts. As the local and national policy considers the impacts of climate change to be more likely to occur and requires embedded mitigation to be included in proposed development, the applicant could strengthen the wording in Table 12-26 rather than what appears to be minimising the likelihood of the impact of this hazard. **The LLFA requests the wording is reviewed.**

In section 12.8, there is no summary of the cumulative Effects for the Road Drainage and Water Environment provided in Chapter 12, only a reference to Chapter 20, which is too vague. **Further work and clarification is required.**

In Table 12-27, There are some unexplained letters in the Residual Effects column of the table. On review of the Chapter 12 Glossary of Abbreviations and defined terms, these are not listed. **Therefore, the LLFA requests clarification for these terms.**

The LLFA also notes that in Table 12-27, the potential effects column does not provide a summary of the significant of the effects. It is also not clear whether the potential effects are assessed before or after mitigation or additional mitigation has been applied. Furthermore, the Potential Effects column on a number of occasions does not give an effect but rather lists a location or a topic. **Further amendments, clarification and information is required to address this lack of information in the summary.**

Appendix 12.2: Flood Risk Assessment

In section 1.5.4, the applicant mentions the access tracks for the viaduct maintenance that cross the River Wensum floodplain. The applicant states "These are to be set close to existing floodplain levels to prevent the introduction of a barrier to flood flow conveyance", however, there is no indication of what level the maintenance access tracks will be set at in relation to the existing surrounding ground level. **Further information on this matter is required to clarify the LLFA's understanding of the track and surrounding ground levels are along with the proposed surface water drainage arrangements for the maintenance access tracks during both the construction and operational phases.**

In section 1.5.5 the LLFA notes the applicant makes a statement regarding the inclusion of "an appropriate freeboard allowance". **However, there is no reference to how much freeboard is provided or where further information is located in the report. Further information and / or clarification is required.**

The LLFA notes the applicant has not acknowledged the need for an ordinary watercourse consent in relation to watercourse diversion and crossing works

from the relevant authority (such as IDB or LLFA). **The LLFA requests acknowledgement to the need for ordinary watercourse consents.**

The LLFA notes in section 1.5.14, the applicant discusses the management of surface water runoff in relation to the Non-Motorised User (NMU) routes. The majority of these routes have some alterations to the route and associated changes to the drainage arrangements. The LLFA notes there is no quantitive assessment of the changes in the impermeable areas for the NMU routes is presented. Therefore, it is not possible for the LLFA to determine if the proposed surface water drainage arrangements are reasonable and prevent an increase in surface water flood risk. **The LLFA requires the applicant to assess and determine the change in the impermeable areas.**

In addition, in section 1.5.14, the LLFA requests clarification as to whether surface water runoff is to be discharged to ground or watercourse on routes 1b, 2, 3, 10, 10a, 10b and 12 as it is not clear in the information given at present. Furthermore, the LLFA notes that no consideration to the assessment or management of water quality of the surface water runoff from the altered NMU routes has been undertaken for routes 1b, 2, 3, 10, 10a, 10b and 12. The LLFA suggests the simple index approach (see the SuDS Manual C753) would be suitable for the assessment of the alterations of the NMU routes. **The LLFA requires the applicant to assess water quality from the altered NMU routes and appropriately design for the management of water quality within the proposed SuDS systems for these elements of the scheme.**

The LLFA notes there has not yet been suitable mention of the need for ordinary watercourse consents from either the IDB or the LLFA. **Therefore, the LLFA reminds the applicant that should additional structures be placed within an ordinary watercourse, there may be a need for an ordinary watercourse consent prior to any works being undertaken.**

The LLFA notes the referencing to Figure numbers in section 1.5.15 state that "an overview of the locations of the temporary works areas is provided in Figure 3.12.02a-1." However, the LLFA has not been able to find this information in this location. The LLFA is aware of potential similar information in Figure 3.03.03. **Clarification and information is required to resolve this matter and to identify the locations of the different types of temporary works compounds and haul roads in relation to the flood risk.**

In section 1.5.16 the applicant identifies the PED network would support the drainage of the temporary works areas with additional drainage ditches around the perimeter. A sediment barrier and settlement ponds are also proposed for the works compound areas. While in section 1.5.17, the applicant identifies the inclusion of ditches serving the haul roads where in some case berms would be incorporated. None of these features have been listed in the description of scheme works even at a high level or on any layout plans. Therefore, there is inconsistency within the proposal presented and it is not clear what features are proposed or where these temporary features that are likely to be in place for at least 3 years are to be placed or what design

capacity they will offer. **Ultimately, the LLFA requires clarification as it is not clear if there is an increase in flood risk from the temporary works features or not, as there is a lack of information at this time. There is no cross reference to Appendix 15 of the drainage strategy for the construction surface water drainage strategy.**

The applicant confirms in section 1.5.19 that the environmental enhancement areas are not included in the drainage strategy. **The LLFA requires that consideration and assessment is given to the existing and post development flood risk as it is part of the development.**

In section 2.2.39, LA 113 is identified as guidance of key importance for the assessment significant risks from road drainage and of a proposed road scheme to the water environment. An environment assessment method is presented in LA 113, which is used for the preparation of Water Environment chapters in Environmental Impact Assessments for both Highway and other major infrastructure projects. The LA 113 is clear that where scoping identifies a likely significant adverse effect on the water environment, a simple assessment in accordance to the relevant national policy and meet the requirements of the relevant overseeing organisations. Section 2.2.40, acknowledges that in this case it is the Environment Agency and Norfolk County Council. The FRA is an assessment of the risk of flooding and assesses the impact of FRA and potential mitigation and management measures that would reduce the identified flood risk. The FRA is then used to inform the assessment of the significance of the impact for the Environmental Impact Assessment. These are two separate assessments where the outcome of the FRA feeds into the EIA assessment. At present the assessment of flood risk in sections 4 and 5 of the FRA are using the EIA method of assessment without providing appropriate evidence and analysis of the evidence to support the assessment. This means the FRA lacks the necessary information and analysis. **The LLFA requires a review of various sections in the FRA and where appropriate amendments to the text to apply the appropriate method of flood risk assessment.**

Informative - The LLFA Statutory Consultee for Planning Guidance Document was last updated in June 2024.

In section 3.3.17, there is no clear justifications for the use of the peak rainfall intensity climate change allowance rather than the peak river flow allowance for the modelling of a watercourse. **The LLFA requires a robust technical explanation to be provided.**

In section 3.6.2, the LLFA notes that only surface water sewers are discussed in the vicinity of the proposed scheme alignment, while "sewers" in general are referred to in 3.6.3 in the urban areas from the Greater Norwich SFRA. **The LLFA requests clarification that all public sewer records were reviewed as part of the FRA.**

In section 4.1.2, the applicant indicates that the management of runoff from the proposed scheme or temporary works areas identified in section 1.5 of the

FRA are not addressed in the FRA but can be found in section 7 of the drainage strategy. On initial review of section 7 of the drainage strategy, the LLFA notes this section focuses on outlining the various methods of conveyance of the Proposed Scheme highway runoff prior to discharge to either attenuation or infiltration basins. This would only have limited relevance to the assessment of flood risk during the construction period once the road and the supporting infrastructure is built and in operation in the late stages of the construction phase. **Further specific consideration to flood risk for the construction phase is required.**

The LLFA raises concerns about the lack of clarity on the flood storage compensation and the flood flow routing in section 4.2.3 to 4.2.4 in the FRA, which does not align with paragraph 49 of the PPG for NPPF. The LLFA is concerned the written text in this section of the report does not appropriately convey the technical considerations as laid out in Paragraph 49. However, as this structure is within the River Wensum floodplain, the Environment Agency would lead on responding on this technical matter. **The LLFA recommends that the LPA consult the Environment Agency on this issue.**

In section 4.2.11 to 4.2.12, the LLFA notes the increase in flood risk after mitigation measures have been applied in relation to the temporary works platform in the River Wensum floodplain. These increases are notable and vary between 130mm (50% AEP) and 460mm (0.1%AEP) with 420mm for the 1% AEP. While the LLFA notes the applicant has modelled results that indicate there is no increase in internal flood risk to existing properties, it is not clear what the land use is for the external areas that are at increased flood risk. **Clarification is needed to better assess the increase in the residual flood risk. The LLFA recommends that the LPA consult the Environment Agency on this issue.**

In section 4.2.19, the applicant noted there is a residual risk associated with the exposure of the gas main that has not yet been mitigated and there is no third party agreement in principle. **The LLFA requires the proposed mitigation and the third party agreement in principle to be provided by the applicant.**

In section 4.2.20, there is a summary of the increases in water levels provided in Table 4-2. Throughout the previous sections 4.2.7 to 4.2.19, there is a discussion on the water depths and water velocities. However, there is no assessment of the change in hazard. The LLFA queries whether the hazard assessment has been undertaken and why it has not been included in the assessment. **The LLFA requires the hazard assessment to be included.**

Informative - In relation to section 4.4.2, the LLFA reminds the applicant for the need of an ordinary watercourse consent prior to undertaking any permanent or temporary works in the ordinary watercourse.

In section 4.4, there is discussion on post development modelled flows, however, there is no discussion on the pre-development flow or a comparison of the flows and levels in the watercourse but rather a reference to the

assessment in section 5.3. Furthermore, there is no information about a hazard assessment using the modelled information. As section 4 is the assessment of flood risk during construction and section 5 is the post development flood risk, it appears from the information presented in the report that an assessment of flood risk during the construction phase has not yet been modelled. **The LLFA requires clarification on what assessment work has been undertaken on the Foxburrow Stream for the construction phase as it is not clear at this time.**

In section 4.5.4, the applicant has identified there would be exception where the temporary PED scheme would be different to the permanent PED arrangement. However, no further information was available in the FRA but rather the reader was directed to the drainage strategy appendix 4.15 and section 2 of the drainage strategy report. No summary of this variation was provided or assessed in the FRA. On initial review of the referenced Appendix 4.15 - Construction Surface Water Management Strategy, the LLFA notes the focus appears to be on pollution control rather than surface water drainage strategy. There is little consideration in the current construction surface water drainage strategy proposals on the management of the quantity of surface water runoff from the construction works. The LLFA requires further work and information. While in section 2 of the drainage strategy report, there is no mention of the exceptions in relation to the temporary works area PEDs. Therefore, the cross references at present do not provide the supportive evidence indicated in the FRA. **The LLFA requires the appropriate supportive evidence and analysis to be included with the FRA.**

The LLFA acknowledge that in section 4.5.5 the discharge from the PED network at either end of the proposed scheme outfalls into existing highway drainage network. While the drainage strategy provides this information, the FRA has not included it into its consideration and assessment. I**t is appropriate for the FRA to identify the final discharge location of these networks and to consider the cumulative impact of discharging to these systems. Further information is required.**

There is a cross reference in section 4.5.6 to the construction surface water management plan that indicates information about the proposed works being within the existing flowpath or diversion is shown. It is not. **The LLFA expects the information to either be provided in the construction surface water drainage strategy or the inappropriate reference and supporting text to be removed from the FRA.**

In section 4.5, there is no discussion on whether there is any change in the level of flood risk during the construction phase of the PEDs for any of the overland flow routes. There is only consideration in the operational phase state once the PEDs are built. **Therefore, the LLFA require the applicant to better assess the flood risk in the construction phase in the FRA for the overland flow routes.**

In section 4.5.10, the FRA makes reference to the management methods in section 4.7 of the CEMP. On review of this document at 4.7 the report gives

no further information other than "Surface water management methods will be detailed within a Surface Water Management Plan document, which will be provided by and monitored by the Principal Contractor". This clearly indicates there is no information available at this time. **The LLFA requires the information on the management of flood risk to people and plant situated within the flow path to either be provided in the CEMP or the surface water management plan is to be provided to support the FRA text.**

In section 4.5.11 there is reference to an attenuation feature associated with the Ringland Lane overland flow path which would be installed at the same time as the PEDs. This was not mentioned in section 4.5.7 and 4.5.8 or in other sections of 4.5 and therefore it is not clear what is being referred to. This inconsistency and lack of information creates a lack of clarity relating to proposed works being considered in the construction phase for the overland flow paths. **The LLFA requires the FRA is updated to provide consistency and clarification to the construction phase flood risk assessment for the Ringland Lane Overland Flow Path.** In addition, section 4.5.11 indicates the PED will reduce the flood risk to the Keeper and the Dell wedding venue. However, no evidence has been provided to support this statement. It is also unclear whether this statement relates to the construction phase or the operational phase as the information is too vague at this time. **The LLFA requires evidence that during the construction phase there is no increase and a betterment in flood risk to the Keeper and the Dell for this statement to be accepted in the FRA.**

In section 4.5.13, the applicant states "The PED network is the primary infrastructure to manage flood risk during the construction phase." It is not clear to the reader at this time whether the PEDs are a temporary or permanent features of the scheme. **The LLFA expect clarification of whether PEDs are temporary or permanent features.**

In section 4.6 it is unclear whether all the surface water drainage basins that are affected by groundwater or whether it is specific basins. The information provided is too vague and does not provide any supporting evidence for the assessment and considerations to be based upon. **The LLFA requires clarification and further evidence regarding the groundwater flood risk to the surface water drainage basins and other relevant structures.**

In addition, in section 4.6.2, the applicant mentions the need to potentially dewater areas to facilitate the construction of the features. However, in section 4.6.4 to 4.6.6 there is no consideration of the flood risk to third parties from the dewatering activities during the construction phase. **The LLFA requires further evidence of consideration of the flood risk associated with dewatering to third parties.**

In the section 4.6 conclusion, the applicant states that "In accordance with the methodology promoted in LA 113 the impact significance will be neutral." Throughout section 4 there has one been one previous reference to LA 113. There has been no further cross referencing to LA 113 through section 4 until

the conclusion. Therefore, there has been no obvious demonstration that the methodology is in accordance with LA 113. **The LLFA requires the appropriate supporting evidence and information to be provided in section 4 to support the statement the method is in accordance with LA 113.** In addition, the conclusions state the impact of construction works have been assessed using detailed groundwater modelling. However, in section 4.6.4 there is only reference to the River Wensum groundwater modelling report. **It is therefore not clear whether areas outside of the River Wensum have been modelled such as the Foxburrow Stream and surface water drainage basin. The LLFA requires clarification on this matter.**

In section 4.1.4, the applicant indicates that "comparative hazard classification is presented to allow more context to be considered where appropriate in areas where there is existing flood risk." The LLFA did not observe the use of this approach through section 4. There was some discussion regarding the existing flood risk and the post construction flood risk but no hazard classification was presented and there was no hazard classification for the construction phase provided either. The information provided in section 4 was high level and vague. **The LLFA requires the comparative hazard classification work is undertaken to assess and report upon the existing and the construction phase flood hazards.**

In section 4.7 on "Other Construction Impacts" does not appear to consider any other construction impacts but focuses on information that has either been presented previously or on management measures to be discussed in the CEMP. **The LLFA requires the content of section 4.7 to be reviewed and updated.**

In section 5 on the post development flood risk, there is a commitment to undertake a comparative hazard classification. Later in section 5.2.16, the applicant states "Given the existing flood risk, changes to the overall flood hazard at these sites is minimal and the flood risk is considered to be unchanged." The applicant has not defined the existing hazard classification or the post development hazard classification and yet there is an unevidenced statement that "the overall flood hazard at these sites is minimal and the flood risk is considered to be unchanged" even though the previous sections (5.2.14 to 5.2.15) identified an increase in flood levels. Furthermore, it is not clear how the applicant finds it possible to comment on flood hazard prior to discussing the impacts on flood velocity. **The inconsistencies in these statements in section 5.2 need to be resolved and the flood hazard needs to be evidenced and reported upon.**

In section 5.2 conclusions, Table 5-4 and 5-5 report a summary of the water level impacts among other information. However, the water level increases that are reported in the tables are not consistent with those in sections 5.2.9 to 5.2.16. **This inconsistency requires further information to be provided to resolve.**

In section 5.3.4, there is reference to the technical work undertaken. However, in this section 5.3.6 the applicant does not appear to use the modelled information as an evidence base. Rather there appears to be no evidence base for statements. There also appears to be no hazard classification for the post development phase provided. The information provided in section 5 so far was high level and vague. **The LLFA requires the comparative hazard classification work is undertaken to assess and report upon the existing and the construction phase flood hazards.**

Furthermore, there are contradictions, for example, in this paragraph the applicant appears to indicate there is a reduction in peak downstream flows and an increase in downstream flows. **This paragraph is either conflicting or not well communicated. The LLFA requires section 5.3.6 to be reviewed and text updated as appropriate to resolve and clarify this matter.**

In relation to the conclusions for section 5.3, there has not been evidence to support the statement in section 5.3.9 that "In accordance with the methodology promoted in LA 113 the impact significance would be neutral." Furthermore, there has been no reference to LA 113 within section 5.3 until the conclusion. Therefore, there has been no obvious demonstration that the methodology is in accordance with LA 113. **The LLFA requires the appropriate supporting evidence and information to be provided in section 5.3 to support the statement the method is in accordance with LA 113.**

The LLFA notes that in section 5.4.3 the modelled results are identified for the reservoir flooding scenario on the River Wensum. However, in the FRA, it is not clear whether there is a technical modelling report to review the scenario or not? **Clarification of where the technical modelling for the reservoir flood risk is reported in relation to section 5.4 of the FRA is required. The LLFA recommends that the LPA consult the Environment Agency on this issue.**

In section 5.5.2 of the FRA, the applicant has indicated that three soakaway basins (basins 1, 5 and 6) are located within areas of shallow groundwater tables. Further high level groundwater risk is identified for basins 5 and 6 but there is no mention of basin 1. There is no further information given regarding the risks other than to review section 5.2.7 in the drainage strategy report, where again there is only consideration of Basins 5 and 6. Section 5.2.7 in the drainage strategy then refers the reader to section 13.12.02 in the FRA, which does not exist. The LLFA double checked 3.12.01 in the FRA but this was also not found. **These cross references in section 5.2.7 in the drainage strategy report are found to been incorrect and require addressing. In addition, the applicant is required to update the information in section 5.5 so there is consideration of basin 1 and to assess the level of flood risk to the basin structures before and after mitigation measures have been undertaken.**

In relation to the conclusions for section 5.5, there has not been evidence to support the statement in section 5.5.7 that "In accordance with the methodology promoted in LA 113 the impact significance would be neutral." Furthermore, there has been no reference to LA 113 within section 5.5 until the conclusion and there has been a lack of assessment within the section. Therefore, there has been no obvious demonstration that the assessment and proposed design is in accordance with LA 113. **The LLFA requires the appropriate supporting evidence and information to be provided in section 5.5 to support the statement the method is in accordance with LA 113.**

The LLFA notes in section 5.6.3 there is reference to Figure 3.12.02a-3. The LLFA reviewed the relevant appendix and found a series of plans, however the figures in part do not show numbering consistent with the description in the FRA. Therefore, it is not clear whether the corresponding plan has been reviewed. **The LLFA require the applicant to number all the figures in the Part A of Appendix A of the FRA and to review the cross referencing to ensure they are correct.**

In section 5.6.6, the applicant reports to have added 45% for the 1% AEP event "based on rainfall intensity requirements" but has not confirmed this is as a climate change allowance. **The LLFA seek clarification this is for a climate change allowance on section 5.5.6.**

The LLFA queries whether the reference to "Breck" in section 5.6.10 is actually Breck Road. Clarification and, if appropriate, update to text required.

The LLFA notes that in section 5.6.12 there is reference to Figure 5-2. Figure 5-2 is in section 5.3 and shows the Comparison of 0.1% annual probability extents for Baseline and Proposed for Foxburrow Stream. The LLFA queries this reference as it is not relevant to the Ringland Lane flowpath. **The LLFA requires the Figure 5-2 reference in section 5.6.12 to be reviewed and updated as appropriate.**

The LLFA notes that in Table 5-6, the modelling of the 3.3% AEP event was considered not applicable. However, in the subsequent text in section 5.6.14, the applicant states "These reductions are modelled to occur from the 1 in 30 to the 1 in 1000 annual probability event". **The LLFA requires clarification and appropriate updates to correct the inconsistency in the 3.3% AEP statement in section 5.6.14 and Table 5-6 is required.**

In section 5.6.16, the applicant has confirmed there is an increase in flood risk of approximately 3000m2 with an associated depth increase of 1m in the 1% AEP +45% for climate change. The area where the increase in flood risk occurs is outside the proposed scheme’s redline boundary upstream of a raised bund feature. While the land affects is agricultural land, (classed as a less vulnerable receptor), it is a significant increase in flood risk elsewhere due to the proposed scheme. **It is not clear from the information in the FRA whether the land where the increased flood risk on the upstream**

side of the Ringland Lane attenuation features will continue to be owned by a third party or the applicant. If it is to be owned by a third party, a written agreement in principle is requested to demonstrate the landowner's acceptance of the increased risk.

In addition, in section 5.6.15 and 5.6.16, the FRA discussion considers the 1% AEP and the 1% plus 45% for climate change events including a depth of 1m upstream of the attenuation bund but no information on the water depth is provided for the 0.1% events. While Figure 5-4 shows a comparison of the pre and post development 0.1% AEP event outlines. The proposed 0.1% event does not indicate if climate change has been applied or not. The Therefore there is no consistent information and evidence presented to support the assessment. **The LLFA requires the applicant to provide evidence both in the figure and the text that supports each other not only in section 5.6.15 but in other sections throughout the FRA.**

In section 5.6.19, the LLFA notes the applicant reports on the results of an assessment without presenting the supporting evidence for this discussion. In addition, there is also mention of the flood hazard rating but no supporting information is provided. **The LLFA requires a review of section 5.6.19 and other similar types of sections throughout FRA chapters 3, 4 and 5 where there are unevidenced statements and result interpretations based on unidentified evidence.**

In section 5.6.19, the applicant states they have assessed the flood risk in accordance with LA 113 method. However, as previously states, this is not the appropriate method for a flood risk assessment. This becomes further apparent in section 5.6.25 and Table 5-7. **The LLFA requires a review of various sections in the FRA and where appropriate amendments to the text to apply the appropriate method of flood risk assessment.**

The LLFA notes that in section 5.6.23, the applicant has identified there is an increase in impermeable area of approximately 85m2. While this is a minor increase, the LLFA notes there has been no assessment of the increase in surface water runoff to evidence the statement. While in section 5.6.24, the applicant states flow would be attenuated and infiltrate with no evidence to support the statement. **Further information and evidence is required to support the FRA assessment for section 5.6.23 and 5.6.24.**

The LLFA notes that in section 6, the assessment of flood risk finally considers application of NPPF and more specifically the application of the Sequential and Exception Tests. It is normally best practise to consider the sequential and exceptions tests in the early stage of the FRA as it will identify some of the areas the FRA would need additional focus upon. The applicant has identified the need to apply the exception test in areas where the proposed will cross the areas of high flood risk. The PPG guidance on demonstrating that wider sustainability benefits to the community outweigh flood risk should be set by the local planning authority (see paragraph 36 of PPG for flood risk and coastal change). Examples that are given in the PPG include re-use of brownfield sites, an overall reduction in flood risk to the

wider community, the use of SuDS integrated with green infrastructure. The consideration of whether the development would provide wider sustainability that outweighs the flood risk is for the relevant planning authority to assess rather than the LLFA. The second part of the exception test is the assessment of whether the proposed development would be safe for its lifetime while taking account of the vulnerability of its users without increasing flood risk elsewhere. For this the flood risk assessment and the drainage strategy provide an essential evidence base. As present, the LLFA have concerns the FRA requires updating due to both a lack of information and concerns the method of assessment for flood risk has not been appropriately undertaken. Therefore, until the FRA has been updated and the relative points addressed, the LLFA considers the FRA to be incomplete. Without this information part 2 of the exception test is not considered to be supported by a robust evidence base. **The LLFA requires the various information identified as not adequately included to inform the FRA and the use of the appropriate method of assessment for the FRA to be undertaken.**

Appendix 12.2a - Figures Part 1

The LLFA notes there is no figure numbering in Appendix 3.12.02. There are only names this has made it difficult on occasions to be confident that the Water Environment Interfaces Figure page 5. **The LLFA requires the numbering to be added to the figures to improve understanding of the cross references that only use the figure numbers in the text.**

The LLFA queries what the yellow arrows along the road corridor denotes as this information is not in the key. **The LLFA requires these symbols to be added to the legend.**

Appendix 12.2 – Sub Appendix J: Ringland Lane FEH Calculation Record and Appendix 12.2 – Sub Appendix G: Foxburrows FEH Calculation Record

Given the large difference and the lack of calibration data, **the LLFA would seek some short-term flow and level gauging or similar to validate the findings as the catchment descriptor methods are not accurate in permeable catchments. Alternatively, the LLFA will require sensitivity checks to be applied on the inflows.**

Appendix 12.2 – Sub Appendix H: Ringland Lane Hydraulic Modelling Report

The LLFA notes that in section 3.5.1 there is no mention of the 3.3% AEP plus climate change event being run in the hydraulic model. In accordance with the Environment Agency National Flood risk assessments: climate change allowances, which states that development with a lifetime beyond 2100 for flood risk assessments "must do this for both the 1% and 3.3% annual exceedance probability events for the 2070s epoch (2061 to 2125)." **The LLFA requests the running of the 3.3% AEP plus climate change event**

to be run for the Ringland Lane hydraulic model and the results included in the various assessments and analysis.

In section 3.5, there is a comparison of the flood extents for the various modelled events. However, there is no further information on the depth and velocity datasets associated with this modelling. **The LLFA requests the depth, velocity and hazard datasets be provided and for change mapping to identify where the changes have occurred for depth, velocity and hazard.** In addition, there is no discussion or comparison of these results, rather the report refers to the FRA. The FRA does not discuss or analyse these results but further refers to the hydraulic modelling report. Therefore, the LLFA notes that no discussion, comparison or analysis of these modelled results has occurred in the EIA. **The LLFA requires that appropriate robust technical discussion, comparison or analysis of these modelled results must be undertaken in the modelling report to then be reported upon in the FRA to support the EIA.**

Figure 3-6 is labelled as the “1 in 30” AEP flood extent comparison but the legend labels as the “1 in 100” AEP extents. This in consistency needs to be resolved. **The LLFA requests an update in either Figure 3-6 or its title.**

Appendix 12.2 – Sub Appendix E: Foxburrow Stream Hydraulic Modelling Report

In section 3.5 the applicant has included tables of baseline and post development modelled water levels and velocities. These are identified in sections 3.5.2 to 3.5.3 however there is no discussion or comparison of these results, rather a refers to the FRA. The FRA does not discuss or analyse these results but further refers to the hydraulic modelling report. Therefore, the LLFA notes that no discussion, comparison or analysis of these modelled results has occurred in the EIA. **The LLFA requires that appropriate robust technical discussion, comparison or analysis of these modelled results must be undertaken in the modelling report to then be reported upon in the FRA to support the EIA.**

The LLFA notes that a 4m x 4m box culvert is proposed on a small stream. The applicant has stated that "No blockage sensitivity testing has been undertaken for the proposed culvert given its significant size in relation to the watercourse." The LLFA has considered this and while it is not supportive of the view, as there is very low potential of a tree being swept down the stream, the potential for blockage is very low and the LLFA is not going to pursue this in our response.

Drainage Strategy: Main Report

In section 4.5, the LLFA notes reference to the "North Norfolk Strategic Flood Risk Assessment". However, as the site is not in North Norfolk, the LLFA is not clear which SFRA is being referred to in this paragraph. **The LLFA requests that information and references are reviewed and updated in section 4.5.**

In section 4.8, the text fails to note the need for climate change to be applied to the 3.3% AEP event in accordance with the Environment Agency National Flood Risk Assessments: Climate Change Allowances. This states that development with a lifetime beyond 2100 for flood risk assessments "must do this for both the 1% and 3.3% annual exceedance probability events for the 2070s epoch (2061 to 2125)." **The LLFA requests the need for climate change to be applied to the 3.3% AEP event is acknowledged in section 4.8.**

In section 5.2, there is an incorrect document number for the cross reference to the FRA which will need to be corrected.

Informative - The LLFA has recently updated the LLFA developer guidance in June 2024 (v7.1).

The LLFA notes for a number of the infiltration Basins (Basin 2, 3 and 4) were selected based on the infiltration information available at present. However, as the applicant has acknowledged, due to the final size and depth of the basin further infiltration testing is needed in accordance with LLFA Developer Guidance that is based upon BRE 365. **As the submitted application is for full planning, the LLFA will require this information is provided to support the application.**

In section 5.2.6, the applicant states that groundwater monitoring will be continuing throughout the pre-construction period. However, the applicant also confirms that the most recent groundwater monitoring results report is from October 2022 (approximately 2 years old). The year of 2022 is noted as being a particularly dry year. While the winter of 2023/2024 is noted for being a wetter winter. As there is a potential risk of groundwater encroachment into the unsaturated zone of infiltration basins, in particular for Basins 5 and 6, it is appropriate for the applicant to provide the latest monitoring results to support this application. **The LLFA requires the latest groundwater monitoring results from across the site to be provided in relation to the drainage basins.**

In section 7.1 the applicant refers to Figures 21 and 22. In figures 21 and 22 it is not clear what the blue stars denote either on the drawing or in section 7.1. **The LLFA requires the applicant to provide clarification of the symbology shown in the figures 21 and 22.**

Also in section 7.1, the applicant refers to the SuDS Manual Guidance stating "Where swale gradients are less than 1.5% the SuDS Manual guidance has been adhered to except at the hogging sections of highway where the risk of flooding is low". **The LLFA requires further information as it is not clear to the LLFA what this guidance is and what the design has done to adhere to the SuDS Manual Guidance. As section 7.2 refers back to the information in section 7.1, it is important that this information is provided.**

In section 7.5.1 on page 57 of the report, the LLFA notes there were also a lack of biodiversity opportunities with the concrete canvas solution. This has not been mentioned in the report. **Further work and clarification is required.**

In section 7.5.2, the applicant refers to an analysis of the spacing of check dams within the highways ditches. However, it is not clear where the analysis is for the LLFA to review. **The LLFA requires this information and analysis to be provided.**

On page 75 of the drainage strategy, a summary table (no table number given) presents greenfield runoff rates for each basin, but there is no supporting evidence for the method used or the results derived shown in Appendix 7. In addition, the greenfield runoff rates are above the corresponding discharge rates (where applicable). The discharge rates for Basin 1 appear to be significantly higher than the greenfield runoff rates. This is not in accordance with the NPPG or the LLFA developer guidance requirements. **The LLFA requires further information and robust technical justification.**

In section 11.2.4, the LLFA notes the applicant is proposing a 3m wide access for ditch maintenance activities. The LLFA normally recommends that a minimum buffer of 3.5m in width should be allocated to allow for access for maintenance. **The LLFA requests robust technical justification for the departure from the recommended 3.5m width for maintenance access.**

The LLFA notes there are two exceedance flow route plans that focus on small areas of the proposed development. However, the LLFA has not been able to find any exceedance flow route plans for the whole development. **The LLFA will require these exceedance flow route plans to be provided for the whole development.**

Appendix 5: MicroDrainage Calculations
SWS A1067 Calculations
On page 8 of the SWS A1067 calculations, a pump manhole is shown labelled A1076-IB. However, on reviewing the drainage relevant plan the LLFA are not able to find this manhole. The LLFA are also unclear why there is a pump manhole when there is no pump. **The LLFA requires clarification on the location of manhole A1067-IB and the justification for the use of a pump manhole when there is no pump.**

The LLFA notes that in the 1%AEP plus 45% climate change event, pipe number A1067-1.003 floods to a volume of 0.688m3. **T**he LLFA acknowledges this is a minor amount and that evidence this water will remain within the manhole and therefore the development area and not affect the carriageway.

Catchment 1 Calculations
The LLFA notes that in the 1%AEP plus 45% climate change event, pipe number ML1-10.000 floods to a volume of 5.026m3. **The LLFA requires**

evidence this water will remain within the development area and not affect the carriage way.

Catchment 2 Calculations
On page 20 of the SWS ML02 calculations, a pump manhole is shown labelled ML02-IB. However, on reviewing the drainage relevant plan the LLFA are not able to find this manhole. The LLFA are also unclear why there is a pump manhole when there is no pump. **The LLFA requires clarification on the location of manhole ML02-IBand the justification for the use of a pump manhole when there is no pump.**

The LLFA notes that in the 1%AEP plus 45% climate change event, pipe number ML2-4.002, ML02-21.012, ML02-21.013, ML02-21.014, ML02-21.015, ML02-21.016, ML02-21.017, ML02-6.002, ML02-21.005, ML02-21.006 and ML02-21.007 floods with minor volumes. The LLFA acknowledges this is a minor amount and that evidence this water will remain within the manhole and therefore the development area and not affect the carriageway. **The LLFA notes that a more notable amount of water escapes the network at manhole 6.002 ML2-31. Therefore, the LLFA requires evidence this water will remain within the development area and not affect the carriage way.**

Catchment 4 Calculations
On reviewing the drainage relevant plans, the LLFA are not able to find all the relevant pipe numbers on the drawing.

Catchment 5 Calculations
The LLFA notes that in the 1% AEP plus 45% climate change event, pipe number ML005-39.005 floods with a minor volume. The LLFA acknowledges this is a minor amount and that evidence this water will remain within the manhole and therefore the development area and not affect the carriageway.

Appendix 6: Ditches and Piped Ditches Calculations

The LLFA are not clear on the calculations or the methods applied to these calculations. **The LLFA require clarification or further information on the method for undertaking these calculations.**

Appendix 7: Greenfield runoff rate estimation for sites

The LLFA notes the Greenfield runoff rates have been calculated for the whole site area. However, there is no evidence of the calculations being undertaken for each of the discreet catchment areas. On page 75 of the drainage strategy, a summary table (no table number given) presents greenfield runoff rates for each basin, but there is no supporting evidence for the method used or the results derived. **The LLFA requires the discreet catchment greenfield runoff rates to be provided as supporting evidence.**

Appendix 9: Ringland Lane Flood Modelling Report

In section 2.2.4, the applicant identifies that the climate change allowance applied to the WSP model were 35%, 44% and 65% (which are the peak river flow allowances). Appendix 9 (modelling report states in section 2.2.4 that "A detailed review of the hydrology has not been completed by Ramboll and no changes to the hydrological assessment have been made by Ramboll unless otherwise stated in this report." but is then followed by confirmation in section 3.1 that applied a 45% allowance for climate change (peak rainfall intensity). While this is consistent with the Chapter 12: Appendix 12.2i: Ringland Lane Hydraulic Modelling Report (Doc. 3.12.02i), the LLFA is unsure why the two reports are inconsistent in the climate change allowances that were applied to the Ringland Lane modelling. **The LLFA require clarification and justification for this inconsistency in the climate change allowances applied to the flows.**

The LLFA requires further information as it is not clear to the LLFA why the selection of two hydrocontrol devices at the same level on the same basin has been proposed, rather than one larger hydrocontrol device at the same level with the same combined controlled discharge rate.

Appendix 12: Landscape Amenity Proposals
The draft drawing on the last page of the report (PK1002-RAM-ELS-MLE-SK-NZ-0001- P01), the notes the proposed locations of benches, interpretation board and wayfinding posts with information to support the amenity value of the SuDS.

Appendix 15: Construction Surface Water Drainage Strategy
In section 2, it is not clear from the text in section 2.0.5 whether there is an agreement in principle for a "streamlined and a bespoke approach" in relation to obtaining watercourse related consents. No evidence of this agreement has been provided in the submission. **The LLFA requires further information.**

The LLFA notes the construction of these temporary and permanent PEDs and associated surface water drainage features will results in bare earth being present in the channels until vegetation cover is established. This vegetation cover is likely to take at least one full growing season to establish in order to ensure that a "clean water" ditch would be able to operate as intended. **Therefore, the LLFA would expect to see further consideration of pollution management during the interim period.**

In section 3.02, the applicant has indicated the temporary ditches would be designed for a 20% AEP event. However, there is no justification for this approach. Further information is required to justify this approach. In addition, initially there is no information relating to the attenuation of surface water runoff from the temporary impermeable construction works site areas. In section 3.0.3, the applicant confirms the proposed permanent ponds and attenuation basins are assumed not to be built at the start of the construction phase. However, later in section 3.1, there is mention of settlement or treatment ponds, although there continues to be a lack of information about the drainage parameters of these proposed settlement ponds. There is no discussion or indication that surface water runoff from impermeable areas

associated with the satellite and working areas (section 3.2) and the Haul Roads (section 3.3) will be managed to prevent an increase in flood risk due to the construction works runoff. **The LLFA requires further information on the proposed design capacity and locations of all temporary attenuation features to ensure there is no increase in surface water runoff during the construction phase.**

No construction works area layout plans have been provided. It is not possible to determine whether the proposed features are being proposed during to construction phase and whether they are offering a suitable level of protection to the surrounding environment. **The LLFA requires further information.**

In section 4, there is a discussion on the control of Flood Risks, principally through the avoidance of areas identified as being at flood risk. However, there is no mention of surface water attenuation in this section either. In section 5.2 there is again a brief mention that settlement ponds could provide some storage, but no further information is provided. **The LLFA requires further information.**

The LLFA also notes in section 4.0.2 and 4.0.3, the contractor has not identified the LLFA as a risk management authority for consenting along ordinary watercourses. **The LLFA requests an appropriate amendment is made.**

On review of Appendix 15 Construction surface water drainage strategy, the LLFA notes the focus appears to be on pollution control rather than surface water drainage strategy. While a well designed surface water drainage system does contribute towards pollution management, there is little consideration in the current proposals on the management of the quantity of surface water runoff from the construction works. **Further work is required to resolve this.**