Borough Council of Kings Lynn & West Norfolk Level 2 SFRA Addendum: Gypsy and Traveller Sites

Final Report

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Contract

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This report describes work commissioned by Claire May on behalf of the Borough Council of King's Lynn and West Norfolk by an instruction dated 9th August 2023. The Client's representative for the contract was Luke Brown of the Borough Council of King's Lynn and West Norfolk. Ed Mumford and Joanne Chillingworth of JBA Consulting carried out this work.

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Acknowledgements

JBA Consulting would like to recognise the assistance of the Environment Agency and the Borough Council of King's Lynn and West Norfolk in completing this assessment.

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Abbreviations

2D	Two Dimensional (modelling)
AEP	Annual Exceedance Probability
BCKLWN	Borough Council of King's Lynn and West Norfolk
EA	Environment Agency
FRA	Flood Risk Assessment
IDB	Internal Drainage Board
LLFA	Lead Local Flood Authority
NPPF	National Planning Policy Framework
PM	Project Manager
PPG	Planning Policy Guidance
SFRA	Strategic Flood Risk Assessment
SUDS	Sustainable Urban Drainage Systems

Executive Summary

Introduction and Rationale

JBA Consulting were previously commissioned to undertake a Level 1 (2018) and Level 2 (2019) SFRA for the Borough Council of King's Lynn & West Norfolk (BCKLWN) to provide an evidence base for flood risk considerations in support of the Local Plan, which were undertaken in line with the National Planning Policy Framework and Planning Practice Guidance at the time of writing. During the Local Plan Examination process, a need was identified for BCKLWN to provide additional sites for Gypsy & Traveller use to fulfil the need evidenced in BCKLWN's assessment 'BCKLWN Local Plan Examination Gypsy and Traveller Site Assessments June 2023'.

This document forms an addendum to the existing Level 2 SFRA, fulfilling the needs of a Level 2 SFRA for sites brought forward to address this need. This document also provides a statement about how elements of the SFRA were conducted between 2018-2019, in accordance with previous PPG, and what the implications are of latest PPG, released in August 2022. It does not provide information on the implications of the publication of Drainage Water Management Plans as published in June 2023.

Robustness of the SFRA

The Level 1 (2018) and Level 2 (2019) SFRAs were comprehensive and robust with regards to using latest available data, hydraulic modelling and flood risk assessment methodologies at the time of preparation of the studies.

The Level 1 SFRA method assessed all sources of flood risk across the BCKLWN area, in line with PPG and the EA's guidance 'How to prepare a Strategic Flood Risk Assessment' (updated in August 2019 after the Level 2 study). Following the preparation of the Level 1 SFRA, the Councils performed the Sequential Test exercise, informed by their estimations of development potential of the available sites using a range of planning policy constraints criteria, which included a range of flood risk and water management considerations. This process informed the decision making on whether development of a site should be considered or not.

Since these previous studies, there have been significant updates to the National Planning Policy Framework and Planning Practice Guidance. This assessment has been undertaken in line with the latest guidance, however the previous work has not been updated as part of this assessment. As the change to the NPPF in July 2021 and the update to the Planning Practice Guidance had not been published, the assessment was not prepared strictly in accordance with the latest and current policy and guidance.

With regards to the implications of the more recent changes to PPG, not present at the time of the studies, we note the following points:

- There is no nationally available groundwater dataset available, but if groundwater is material to the placement of development, then more detailed studies would

now be included in a Level 2 SFRA (this is more detailed analysis based on a more in-depth assessment of local data, but can only practically be performed on sites that have already been selected using the flood risk information in the Level 1 SFRA). This risk should in any case be addressed and mitigated at FRA stage.

- Flood Zone 3b changing to the 30-year extent instead of 20-year: the SFRA looked at a range of severity flood risk events, so sites would have been captured conservatively for assessment due to being at risk in more severe events: Flood Zone 3a, 2. The main implication is most likely to affect the potential developable area rather than the principle of development at a particular site allocation. The updated Flood Zone 3b extent should be modelled and mapped as part of new FRAs in line with latest guidance.
- As already noted, the guidance recommends that climate change mapping is now used in addition to present-day flood risk to inform the preparation of the Sequential Test. The SFRA used the latest climate change allowances at the time of the studies and sites brought forward for Level 2 assessment were assessed on all the Flood Zone classifications. It is difficult to comment on the extent to which the introduction of climate change data affects the comparative risk at particular sites. It is probable that it would not normally affect the principle of development, but it should be recognised that if this is a concern then there would be a need to understand the exact circumstances applying to particular sites and whether this affected the selection of alternatives.
- The guidance now recommends that surface water with climate change should be evaluated. The SFRA used a conservative proxy of the 1000-year extent as there was no modelling required at the time. The important factor is that surface water risk has been considered in the existing SFRA and the sequential site selection process.

Overall, it is observed that the SFRA technical work supporting the site selection process contained flood risk information that exceeded the minimum recommendations as existed in the guidance at the time of preparation of the assessment. The SFRA does not explicitly contain all of the flood risk mapping that is now recommended in the current guidance, but it should be noted that some of this data is not readily available and would not currently be appropriate for use in a comparative assessment of flood risk if the SFRA was prepared.

The SFRA does not explicitly address all of the matters raised by the changes to policy and guidance in 2022. It is anticipated that additional modelling required by the latest PPG would not be expected to have a material effect on the site allocations, although without performing a more detailed exercise on the comparison of particular alternatives this cannot be verified for all circumstances. It is probable that the decision on whether the principle of development can be supported is not changed in most cases although it should be recognised that other technical matters will need to be addressed at the site-specific FRA stage.

SFRA Site Screening

A Statement of Common Ground was agreed with the Environment Agency which included a methodology for sequentially assessing the risk to sites and placing them in order of preference.

BCKLWN supplied 53 potential Gypsy and Traveller site allocations to be screened against flood risk data following the agreed methodology, summarised in Table 2. 24 sites were taken forward to public consultation following screening and BCKLWN's assessment of wider benefits/ non-flood risk considerations. Of those, 12 sites had flood risk issues identified that would require a site-specific assessment as part of the SFRA. These assessments are included as Appendix B. BCKLWN have identified that there is not enough available land to satisfy the need on new or existing sites outside Flood Zones. No new sites are proposed within Flood Zones, however expansion of existing sites within Flood Zones is being considered. This is only due to the majority of these existing sites already having planning permission.

Following the screening sites GT17, GT28, and GT35 have been identified as not at risk of flooding in the most extreme events, and on that basis are appropriate for development. However, it is noted that these sites are shown to be on a 'dry island' during the 0.1% AEP event (meaning that, during this event, the site itself does not flood however is surrounded on all sides by floodwater which is likely to significantly impede access/egress), and therefore will require a Flood Warning and Evacuation Plan (FWEP) to be completed as part of a site-specific Flood Risk Assessment at the planning application stage. This should consider the lead time to flooding and likely duration of flooding, as well as the depth, velocity and hazard of flooding along access routes.

Part of site GT18 is similarly not at risk and may be possible to allocate subject to the same considerations.

Further Recommendations

Whilst the screening has been undertaken based on risk in the 2080s epoch (accounting for climate change), any assessment of flood risk to a site should consider the lifetime of the development. Therefore, whilst a site may have significant issues in the 2080s epoch, it may be possible to safely bring the site forward provided its lifetime as a highly vulnerable use is limited to an earlier epoch. This has been considered for specific sites as part of the site-specific assessments.

It is recommended that any planning application which seeks to bring forward highly vulnerable land uses on defended land include an assessment of the condition of defences, lifetime of defences, and how defences are to be funded throughout the site's lifetime. It must be demonstrated that users of the site could be safely evacuated in the event of breach/overtopping throughout the lifetime of the development as part of a Flood Warning and Evacuation Plan.

1 Introduction and Context

1.1 Introduction and Rationale

JBA Consulting were previously commissioned to undertake a Level 1 (2018) and Level 2 (2019) SFRA for the Borough Council of King's Lynn & West Norfolk (BCKLWN) to provide an evidence base for flood risk considerations in support of the Local Plan, which were undertaken in line with the National Planning Policy Framework and Planning Practice Guidance at the time of writing. During the Local Plan Examination Process, a need was identified for BCKLWN to provide additional sites for Gypsy & Traveller use to fulfil the need evidenced in BCKLWN's assessment 'BCKLWN Local Plan Examination Gypsy and Traveller Site Assessments June 2023'.

The Borough Council of King's Lynn and West Norfolk has engaged with the Environment Agency in their approach and demonstrated through a documented sequential screening process that there are not sufficient sites outside Flood Zones to meet the required need. Therefore, to accommodate the current and future needs for Gypsy and traveller sites, as such sites within Flood Zones 2 and 3 are being explored.

Any new sites (not already permitted) in Flood Zones 2 and 3 are not considered at this stage. Only existing established sites within the flood zones are being considered. This is largely because a direct accommodation need has arisen from some of these sites. In addition, as some of these sites already have agreed mitigation schemes as part of their previous planning permissions, it is only appropriate to investigate whether such mitigation is supportive of intensification of further development on these sites.

This document forms an addendum to the existing Level 2 SFRA, fulfilling the needs of a Level 2 SFRA for sites brought forward to address this need. This document also provides a statement about how elements of the SFRA were conducted between 2018-2019, in accordance with previous PPG, and what the implications are of latest PPG, released in August 2022. It does not provide information on the implications of the publication of Drainage Water Management Plans as published in June 2023.

2 Robustness of the SFRA (Level 1 2018 and Level 2 2019)

2.1 Available Information

The Level 1 (2018) and Level 2 (20219) SFRAs were comprehensive and robust with regards to using latest available data, hydraulic modelling and flood risk assessment methodologies at the time of preparation of the studies.

Data was requested and sourced from the Environment Agency, Lead Local Flood Authority (Norfolk County Council), Water Companies and other partners to capture the latest data as available at the time. Any updated data available between the Level 1 and Level 2 was requested and received from the EA and LLFA.

2.2 Robustness of the SFRA Methodology

The Level 1 SFRA method assessed all sources of flood risk across the BCKLWN area, in line with PPG and the EA's guidance 'How to prepare a Strategic Flood Risk Assessment' (updated in August 2019 after the Level 2 study). Following the preparation of the Level 1 SFRA, the Councils performed the Sequential Test exercise, informed by their estimations of development potential of the available sites using a range of planning policy constraints criteria, which included a range of flood risk and water management considerations. This process informed the decision making on whether development of a site should be considered or not.

The Councils' shortlisted site boundaries were screened against the following data, showing the focus as not just on fluvial Flood Zones, to determine the percentage area of the site which was covered by the following:

- Fluvial Flood Zones
- Surface water flood map 30-year, 100-year and 1,000-year
- Historic flood map
- Areas outside of Flood Zones

To further assist the process, a Red-Amber-Green analysis was then applied to the site screening exercise, to identify the following:

- Red - To indicate sites that required a Level 2 assessment (fluvial flood risk or significant surface water flood risk).
    - In order to assess whether a site was deemed to have significant surface water risk, professional judgment was used based on the extent and location of the surface water issues relative to the site and access and egress (the basis for this site judgement was whether it would be possible to implement development at a site incorporating layout and development form that did not

materially affect flood risk or could incorporate measures to mitigate risks). This aspect of the Level 2 SFRA addressed flood risk matters that exceeded the requirements as nationally recommended in the PPG at the time, which was to principally focus on Flood Zones (fluvial risk).

- Amber - To indicate sites that required a statement in the main report to set out that these are deemed lower risk, but there is still some risk to be considered by developers at FRA stage.
- Green - Which sites are at no/ very low risk and therefore do not require a Level 2 assessment.

It should be noted that groundwater flood risk was not included in the ranking exercise, as there were no competent data sets available at the time that would enable a comparative assessment of risk to be performed and this is remains the case today. Similarly, prior to the publication of the Drainage and Wastewater Management Plans (DWMPs) in June 2023, there are no competent data sets to enable a comparative assessment of sewer flooding, as this data can only be obtained for postcode areas and again this remains the case today. Reservoir risk mapping was (and remains) unavailable, as the mapping prepared describes a "credible worst case" dam failure but does not provide information on the probability (and hence the risk) of such an event.

Whilst it is not appropriate to use these datasets to sequentially rank sites, where a site is identified to be at risk from reservoir or groundwater flooding (regardless of risk from other sources) a site-specific flood risk assessment should be undertaken to confirm the risk to the site. These datasets have also been considered in Level 2 site-specific assessments undertaken as part of this Level 2 SFRA.

Where available, climate change data was obtained, but climate change mapping was not prepared for all sources of risk. As the change to the NPPF in July 2021 and the update to the Planning Practice Guidance had not been published, the assessment was not prepared strictly in accordance with the latest and current policy and guidance.

2.3 Hydraulic Modelling Approach

The SFRA was comprehensive and robust with regards to hydraulic modelling and flood risk in accordance with the guidance and policy as applied at the time of preparation.

All available hydraulic models were requested and received from the EA and LLFA. Mapped model outputs were used to form the SFRA mapping (Flood Zones 3b, 3a and 2), particularly as the EA's Flood Map for Planning in this region did not reflect latest model outputs. For areas outside of the detailed model coverage, this is represented by the Environment Agency's Flood Map for Planning Flood Zones 2 and 3 to provide a conservative indication.

The models and climate change allowances used in the SFRA are outlined in Appendix D of the Level 1 SFRA. There are a large number of models covering this complex area, and much of the risk is tidal in nature. As flood zones are based on undefended model outputs, much of the low-lying study area is within Flood Zones 2 & 3.

For the Level 2 SFRA, depth, velocity and hazard mapping was used from the models where it was available (models with a 2D element).

The models were also re-run for latest climate change allowances at the time of the studies. Climate Change is discussed further in Appendix D of the Level 1 SFRA.

Since 2021, it is likely there will have been updates to some of the models used; whilst these updates might have resulted in localised changes to mapped flooding, overall it would not be expected to materially change the flood risk picture assessed in the SFRAs at the time. Any future FRA for a particular allocated site would require latest modelling to be requested from the EA and so would be informed by an up-to-date assessment of flood risk.

2.4 Climate Change Modelling

2.4.1 2016 Guidance

The Level 1 and Level 2 SFRA assessed fluvial climate change allowances from February 2016 guidance on the EA models used in the study, which was 100-year + 25% (central), 35% (higher central) and 65% (upper end) for the 2080s epoch. Where no detailed hydraulic models were available, Flood Zone 2 was used as a proxy; this was considered to be an appropriate method given the Upper End allowance extents are often similar to the Flood Zone 2 extents, therefore the difference would be deemed to be minimal.

For tidal risk, the Norfolk coastal climate change modelling followed the 2016 guidance relating to sea level increases. In the wave models, a 5% allowance for increases in wind speed for the 2050s epoch and a 10% allowance for increases in wave height for the 2115 epoch, were used.

The 1,000-year surface water extent was also used as an indication of climate change on surface water risk for the 1 in 100-year design flood event and fluvial risk to smaller watercourses, which are too small to be covered by Environment Agency flood Zones. More detailed hydraulic modelling in these areas would be required at site-specific Flood Risk Assessment stage to confirm flood risk and climate change impacts.

2.4.2 2021 Guidance

Since the L2 SFRA was completed in 2019, the EA has published new climate change guidance in July 2021, moving from allowances based on large river basins to distinct management catchments. The BCKLWN authority area falls almost entirely into the Northwest Norfolk management catchment, with small parts of the borough also falling into the neighbouring North Norfolk Rivers, Broadland and Nene management catchments.

The new allowances in Table 1 are covered conservatively by the previously modelled +35% or +65% allowances. Latest guidance suggests using the Central or Higher Central allowances for the majority of instances for development, therefore having the previously modelled Upper End allowance gives a conservative estimate of climate change compared

to the new allowances (i.e. the proportion of the sites predicted to be affected by climate change risk will be reduced using the most up to date guidance).

Table 1: Peak River Flow Allowances Relevant to the Borough of King's Lynn and West Norfolk

Management Catchment	2080s Epoch Peak River Flow Allowance (%)		
	Central	Higher	Upper
Northwest Norfolk	23	33	30
North Norfolk	14	24	48
Broadland	11	20	44
Nene	4	13	36

2.4.3 2022 Guidance

In 2022, the equivalent rainfall climate change allowances were updated. The SFRA did not explicitly model climate change on surface water. The 1,000-year surface water flood extent was used to infer climate change risk on surface water, which was considered to be an appropriate proxy, such as that where Flood Zone 2 was used for fluvial risk in the absence of model data.

Developers undertaking FRAs would need to model latest climate change allowances at their sites based on the EA guidance: Peak river flow climate change allowances by management catchment - GOV.UK (www.gov.uk).

2.5 Implications of the latest PPG

With regards to the implications of the more recent changes to PPG, not present at the time of the previous studies, we note the following points:

- There is no nationally available groundwater dataset available, but if groundwater is material to the placement of development, then more detailed studies would now be included in a Level 2 SFRA (this is more detailed analysis based on a more in-depth assessment of local data, but can only practically be performed on sites that have already been selected using the flood risk information in the Level 1 SFRA). This Level 2 SFRA has considered groundwater as part of site-specific assessments. For sites included in previous studies, this risk should in any case be addressed and mitigated at FRA stage.
- Flood Zone 3b changing to the 30-year extent instead of 20-year: the SFRA looked at a range of severity flood risk events, so sites would have been captured conservatively for assessment due to being at risk in more severe events: Flood Zone 3a, 2. The main implication is most likely to affect the potential developable area rather than the principle of development at a particular site allocation. The updated Flood Zone 3b extent should be modelled and mapped as part of new FRAs in line with latest guidance.

- As already noted, the guidance recommends that climate change mapping is now used in addition to present-day flood risk to inform the preparation of the Sequential Test. The SFRA used the latest climate change allowances at the time of the studies and sites brought forward for Level 2 assessment were assessed on all the Flood Zone classifications. It is difficult to comment on the extent to which the introduction of climate change data affects the comparative risk at particular sites. It is probable that it would not normally affect the principle of development, but it should be recognised that if this is a concern then there would be a need to understand the exact circumstances applying to particular sites and whether this affected the selection of alternatives.
- The guidance now recommends that surface water with climate change should be evaluated. The SFRA used a conservative proxy of the 1000-year extent as there was no modelling required at the time. The important factor is that surface water risk has been considered in the existing SFRA and the sequential site selection process.

Overall, it is observed that the SFRA technical work supporting the site selection process contained flood risk information that exceeded the minimum recommendations as existed in the guidance at the time of preparation of the assessment. The SFRA does not explicitly contain all of the flood risk mapping that is now recommended in the current guidance, but it should be noted that some of this data is not readily available and would not currently be appropriate for use in a comparative assessment of flood risk if the SFRA was prepared.

The SFRA does not explicitly address all of the matters raised by the changes to policy and guidance in 2022. It is anticipated that additional modelling required by the latest PPG would not be expected to have a material effect on the site allocations, although without performing a more detailed exercise on the comparison of particular alternatives this cannot be verified for all circumstances. It is probable that the decision on whether the principle of development can be supported is not changed in most cases although it should be recognised that other technical matters will need to be addressed at the site-specific FRA stage.

2.6 Site Specific Flood Risk Assessments (FRAs)

The SFRA contains mapping and data that has been used to support the preparation of the Sequential Test based on detailed modelling available at the time and historic data.

It is observed that there are ways of controlling flood risk issues at the site level as part of Masterplanning. Any future FRA will be required to assess all sources of flood risk in line with latest PPG requirements, so in the absence of any SFRA data, a site could still be brought forward in terms of allocation, and the FRA would need to provide the appropriate level of detail, demonstrate flood risk at the site and any mitigation required to not adversely increase this on or off site.

The SFRA recommends and has been used to apply a sequential approach in locating development away from areas of flood risk. The scope of site-specific FRAs will need to

reflect the content of the latest guidance and policy and thus any adjustments to accommodate the differences arising since the allocation sites were identified would be expected to be accommodated.

3 Statement of Common Ground

3.1 Context of the Draft Statement

BCKLWN have engaged with the Environment Agency and agreed in principle a Statement regarding the approach to assessing and allocating Gypsy and Traveller sites as part of the Strategic Flood Risk Assessment. At the time of writing this Draft Report, the Statement has been agreed in principle and is awaiting agreement with the Environment Agency on minor wording amendments prior to the Statement being formally adopted.

3.2 Draft Statement (final wording subject to Environment Agency Agreement)

This Statement addresses areas of common ground identified between the Borough Council of King's Lynn and West Norfolk (BCKLWN) and the Environment Agency (EA) with regard to the allocation of Gypsy and Traveller sites within the Borough.

The EA and BCKLWN recognise that there is a clearly evidenced need for additional Gypsy and Traveller sites to be allocated within the Local Plan (as evidenced in 'BCKLWN Local Plan Examination Gypsy and Traveller Site Assessments August 2023). This statement considers the need to address this clear deficit and does not provide a precedent for other development in areas of flood risk more generally. It will not be applied for other residential caravan applications such as holiday lets and temporary worker accommodation. It will also not apply to windfall applications to provide pitches beyond the number required.

It is recognised that under the Planning Practice guidance (PPG) and National Planning Policy Framework (NPPF), most such sites would be classed as 'Highly Vulnerable' and therefore not appropriate for allocation in Flood Zones 2 or 3.

Flood Zones 2 and 3 are widespread within the Borough, severely limiting the availability of land outside of Flood Zones that could reasonably be allocated for 'Highly Vulnerable' use.

It is also recognised that a number of the potential allocations are existing sites (both formally recognised and informally 'tolerated') within Flood Zones.

It follows that there are wider benefits for new allocations/ expansion of existing Gypsy and Traveller sites to be in locations near existing communities and where there are already supporting local services in place. These benefits must be weighed against the risk from flooding, and it is accepted that there may be circumstances where these benefits outweigh risk to sites. In those circumstances, expansion of existing sites may be preferable to the development of new sites where flood risk may be lower.

BCKLWN have completed an assessment of the need within the Borough, and an assessment of the sites available to address this need:

The Council has taken a pragmatic approach to the process of allocating Gypsy and Traveller sites in response to the high level of need identified within the GTAA. Firstly, the Council compiled a list of all existing (authorised and unauthorised) sites across the Borough. These sites reflect those that were assessed as part of the GTAA process.

Secondly, it prioritised those sites/ locations where a specific accommodation need has been identified through the GTAA. This was undertaken to identify whether the need could be solely met on those identified sites, rather than on sites where a need had not been identified. Thirdly, all other remaining Gypsy and Traveller sites, along with some suitable HELAA sites and any sites promoted via planning applications, were assessed as 'reasonable alternatives' for accommodating the need for Gypsy and Travellers.

The HELAA sites were included especially for locational purposes and acted as a contingency in case other existing Gypsy and Traveller sites were considered 'not suitable' for development within the priority locations.

All sites were subject to a site assessment and relevant site-specific information has been included for each site where available. Some of this information was reliant on information from infrastructure partners. The assessment of the sites followed the agreed methodology - for assessing sites – as identified within the Council HELAA. This focused on identifying whether a site is suitable for development. Due to the nature of this particular land use, more focused discussion was required with the Environment Agency and other agencies and departments due to their more remote and isolated locations.

The EA and BCKLWN therefore agree that pragmatic balance must be struck between addressing the need in the areas where it exists and managing the flood risk to these sites.

The EA recognise that Flood Zones 2 and 3 are defined using undefended modelling outputs and do not consider important factors such as the depth, velocity, and hazard of flooding, nor the existence of defences, condition of defences, and the funding of defences into the future which could substantially influence the 'true' risk to sites.

The EA therefore agree that, in principle, if it can be demonstrated that the residual risk to proposed sites is low and can be safely managed (in line with the criteria detailed in Section 2 below which have been discussed and agreed with the Environment Agency), then it may be appropriate to allocate 'Highly Vulnerable' Gypsy and Traveller sites in locations otherwise identified as Flood Zones 2 and 3, and they will not object to allocations made on this basis.

4 Screening of Sites for Level 2 Assessment

4.1 Methodology for Sequentially Assessing Sites

The NPPF lays out the requirement for sites to be allocated sequentially in order of flood risk, allocating those sites at lowest risk first before allocating sites at higher risk, considering all sources of flooding. The process below for allocating within Flood Zones will only be followed where it is clearly evidenced that as much of the need as possible has been allocated outside of areas of risk and there are no options to fulfil the need but to allocate within the Flood Zones.

The following methodology has been agreed with the Environment Agency and has been used to sequentially assess potential Gypsy and Traveller site allocations. Sites have been screened using the latest Environment Agency Modelling (defended, undefended and breach outputs), and the Environment Agency's Risk of Flooding from Surface Water dataset. Groundwater flood risk should be considered as part of site-specific assessments but there is no equivalent national mapping or datasets available to directly compare with fluvial/tidal/pluvial risk for allocation purposes. Rather, once sites have been assessed for other sources, a groundwater assessment should be undertaken for preferred sites. The Environment Agency will advise whether any proposed sites are at risk from Reservoir emergency drawdown procedures; any sites identified at risk should not be allocated. Preference is given in order from Category 'A' (most preferable) to Category H. Sites within Category H (for any criteria) are considered least preferable and are likely to need significant mitigations/considerations to be bought forwards safely. Proposed categories are outlined in Table 2.

Table 2: Criteria for Screening and Sequentially Assessing Gypsy and Traveller Sites

	Fluvial/Tidal Risk	Surface Water Risk	Residual Risk	Flood Warning and Evacuation
A	Outside FZ2&3	Very low risk (<5% site at risk in the 0.1% AEP + CC event)	None	Not required
B		Some risk (<20% site at risk in the 0.1% AEP + CC event), likely to be manageable through site layout and SUDS		
C	Inside FZ2, but modelling indicates not at risk in the defended 0.1% AEP event, where funding is secured for defences into the future	Very low risk (<5% site at risk in the 0.1% AEP + CC event)	Maximum hazard on site and along access routes in undefended event or Tidal Hazard Mapping does not exceed 'danger for some'	Should demonstrate that the site can be safely evacuated in the event of a breach or overtopping of defences during the 0.1% AEP event or 1% AEP event including climate change, whichever is greater. Particular caution should be taken where a site is within 250-500m of a defence.
D		Some risk (<20% site at risk in the 0.1% AEP + CC event), likely to be manageable through site layout and SUDS		
E	Outside FZ2&3	Significant risk (>20%, <50% site at risk in the 0.1% AEP + CC event), likely to require significant interventions to manage surface water on site	None	May be necessary depending on nature and location of risk.
F	Inside FZ3, but modelling indicates not at risk in the defended 0.1% AEP event,	Very low risk (<5% site at risk in the 0.1% AEP + CC event)	Maximum hazard on site and along access routes in undefended	Should demonstrate that the site can be safely evacuated in the event of a breach or overtopping of
G		Some risk (<20%		

		Fluvial/Tidal Risk	Surface Water Risk	Residual Risk	Flood Warning and Evacuation
		where funding is secured for defences into the future	site at risk in the 0.1% AEP + CC event), likely to be manageable through site layout and SUDS	event or Tidal Hazard Mapping does not exceed 'danger for some'	defences during the 0.1% AEP event or 1% AEP event including climate change, whichever is greater. Particular caution should be taken where a site is within 250-500m of a defence.
H		Within FZ2 or 3 where defended model outputs suggest the site is at risk in the 0.1% AEP event or 0.5% AEP + CC scenario, whichever is greater, or where defended, but funding for defences is not identified as being secure into the future	>50% of the site shown to be at risk in the 0.1% AEP + CC surface water event	Hazard on the site in breach or undefended outputs is classified as 'danger for most' or higher', or site is within 250m of a defence.	

4.2 Screening Outputs

BCKLWN supplied 55 potential Gypsy and Traveller site allocations to be screened following the agreed methodology. Sites were screened against Flood Map for Planning Flood Zones 2 and 3, the 1000-year surface water extent, defended and undefended 0.1%/ 0.5% AEP with climate change model extents (including hazard outputs), and distance from defences.

The Association of Drainage Authorities Future Fens Flood Risk Management Baseline Report[1] was used to identify the funding status of defences within the area. There are funding gaps identified with all defences in the BCKLWN Authority area.

The Screening was based on outputs from the following Environment Agency models:

- The Wash Model (2019)
- Fenland Flood Risk Mapping Models (2016)
- Anglian Tidal Hazard Mapping Model (2012)
- Fenland Flood Zone Improvements Models (2007)
- Tidal Nene (2016)
- East Anglian Coastal Modelling (Wells) (2019)

No models were rerun as part of this assessment, however the majority of sites are within the Environment Agency's the Wash Model and Anglian Tidal Hazard Mapping Model. The Wash Model was run with the previous +35% Climate Change allowance, which is considered to be very similar to the latest Higher Central allowance (33%) for the Northwest Norfolk management catchment. The Anglian Tidal Hazard Mapping Model applied the guidance at the time of 15mm per year up to the 2085-2115 epoch, which is similar to the latest guidance of 13mm per year up to the 2096-2125 epoch. It is noted that this means the tidal climate change extents are more conservative than the latest allowances.

A table of screening outputs is provided in Appendix A.

4.3 Sites Taken Forwards for Level 2 Assessment

Following the site-screening, and BCKLWNs assessment of the suitability of sites on non-flood risk criteria (highways, local benefits etc.), the following sites were taken forward to consultation. BCKLWN have identified that there are not sufficient suitable available new or existing sites outside of the Flood Zones to satisfy the need. Expansion of existing sites within Flood Zones 2 or 3 has therefore been considered to help address this shortfall. There are currently no proposals to allocate new sites within Flood Zones 2 or 3 for highly vulnerable use. Of the 24 sites taken forward to consultation, 12 sites were determined to require a site-specific assessment as part of the Level 2 SFRA, as noted in Table 3. Site Summary Tables setting out the risk to sites and considerations required to bring the site forward safely are given in Appendix B.

1 https://www.ada.org.uk/wp-content/uploads/2021/05/Future-Fens-Flood-Risk-Management-Baseline-Report-Final_web.pdf

This assessment provides a basis for assessing sites in order of preference as part of the Sequential Test. The Site Summary Tables provide evidence to inform the flood risk portion of the Exception Test, including a high-level assessment of likely mitigations required to make the site safe; however, it remains for BCKLWN to satisfy itself that the wider benefits to development outweigh the risks to sites.

Table 3: Sites taken forward for consultation.

Ref	New or Existing Site	Site Name/address	Indicative Number of additional Pitches	Screening Classification	Site Table Required
GT05	Existing	19 - 121 Magdalen Road, Tilney St Lawrence	1	H	Yes
GT09	Existing	The Stables, Walpole St Andrew	1	H	Yes
GT11	Existing	Homefields, (Western Side, Goose Lane), Walpole St Andrew	1	H	Yes
GT14	Existing	West Walton Court, Blunts Drove, Walton Highway	10	H	Yes
GT15	Existing	Land SW Common Road (The Bungalow) Walton Highway	1	H	Yes
GT17	Extension to existing	Land at The Lodge, Small Lode, Upwell	2	A	No
GT18	Extension to existing	Land at 2 Primrose Farm, Small Lode, Upwell	6	F	Yes
GT20	Existing	Land at Botany Bay, Upwell	1	B	No
GT21	Extension to existing	Land at Four Acres, Upwell	1	F	Yes
GT28	Existing	155, Small Lode, Upwell	3	C	No
GT25	Existing	Land at the Oaks, Northwold	3	A	No
GT34	Existing	Land at Creaksville, South Creake	4	A	No
GT54	Existing	Land at the Pines, Whittington	2	A	No

Ref	New or Existing Site	Site Name/address	Indicative Number of additional Pitches	Screening Classification	Site Table Required
GT55	Existing	Land at Victoria Barns, Basin Road, Outwell	1	A	No
GT56	Existing	Wheatley Bank, Walsoken (South of Worzals paralell to A47)	9	H	Yes
GT 59	Existing	Land at Spriggs Hollow, Walsoken	1	G	Yes
GT62	Existing	Land at Redgate Farm, Magdalen Road, Tilney St Lawrence	2	H	Yes
GT65	Existing	Tall Trees, Downham Road Salters Lode Downham Market	4	H	Yes
GT66	Existing	Land at Brandon Road, Methwold	1	A	No

4.4 Sites with specific considerations

Following the screening, sites GT17, GT28, and GT35 have been identified as not at risk of flooding in the most extreme events, and on that basis are appropriate for development. However, it is noted that these sites are shown to be on a 'dry island' during the 0.1% AEP event, and therefore will require a Flood Warning and Evacuation Plan (FWEP) to be completed as part of a site-specific Flood Risk Assessment at the planning application stage. This should consider the lead time to flooding and likely duration of flooding, as well as the depth, velocity and hazard of flooding along access routes. Given the sites are not themselves at risk, a policy of shelter-in-situ may be appropriate for the sites, but it will need to be clearly evidenced in the FWEP that the site residents will be safe and consider how long the site would be isolated for and how emergency services would be able to access the site during a flood if necessary.

Part of site GT18 is similarly not at risk and may be possible to allocate subject to the same considerations.

Site GT26 is within 500m of defences, and any site-specific Flood Risk Assessment will need to demonstrate that users of the site are either safe or will be able to evacuate safely in the event of breach or overtopping, using modelled outputs.

5 Further Recommendations

5.1 Further Recommendations

Site specific recommendations are made within the Site Summary Tables in Appendix B. The recommendations below apply to all sites within the study areas.

Whilst the screening has been undertaken based on risk in the 2080s epoch, any assessment of flood risk to a site should consider the lifetime of the development. Therefore, whilst a site may have significant issues in the 2080s epoch, it may be possible to safely bring the site forward provided its lifetime as a highly vulnerable use is limited to an earlier epoch. This has been considered for specific sites as part of the site-specific assessments.

It is recommended that any planning application which seeks to bring forward 'Highly Vulnerable' land uses on defended land include an assessment of the condition of defences, lifetime of defences, and how defences are to be funded throughout the site's lifetime. It must be demonstrated that users of the site could be safely evacuated in the event of breach/overtopping throughout the lifetime of the development as part of a Flood Warning and Evacuation Plan.

It is essential that the recommendations made within site tables with regard to site-specific FRAs and Flood Warning and Evacuation Plans are translated into policy as pre-requisites to development ensure that users of these Highly Vulnerable sites are safe throughout the site's lifetime.

A Table of Site Screening Outputs

Ref.	Cate-gory (A-H)	Area (ha)	% Site within extent			Within Xm of defences		Max Hazard in 0.1% AEP Fluvial/0.5% AEP Tidal		Funding for defences?	Notes
			FZ2	FZ3	0.1 % AEP SW	250m	500m	Defended	Un-defended		
GT24	A	0.3	0	0	0	No	No	None	None	N/A	No issues- can be taken forward
GT25		0.5	0	0	0	No	No	None	None	N/A	
GT34		0.7	0	0	0	No	No	None	None	N/A	
GT39		0.3	0	0	0	No	No	None	None	No	
GT54		0.4	0	0	0	No	No	None	None	N/A	
GT55		0.2	0	0	0	No	No	None	None	N/A	
GT59		0.1	0	0	0	No	Yes	None	None	No	
GT66		0.5	0	0	0	No	No			No	
GTRA (A)		1.4	0	0	2.6	No	No	None	None	N/A	
GTRA (B)		0.8	0	0	0.9	No	No	None	None	N/A	
GTRA (E)		2.1	0	0	0	No	No	None	None	N/A	
GTRA (F)		0.5	0	0	0	No	No	None	None	N/A	
GTRA		1.5	0	0	2.7	No	No	None	None	N/A	

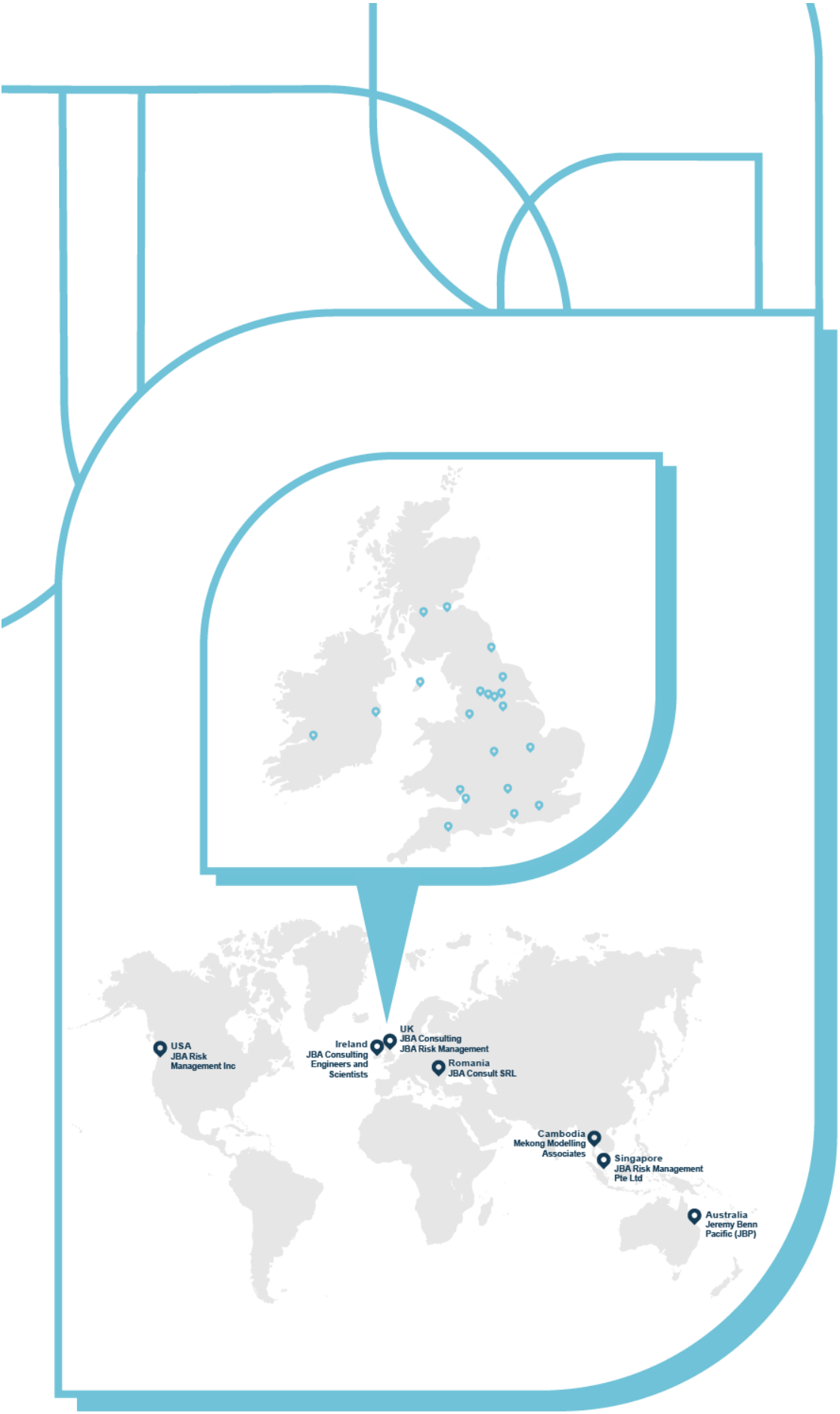
Ref.	Cate-gory (A-H)	Area (ha)	% Site within extent			Within Xm of defences		Max Hazard in 0.1% AEP Fluvial/0.5% AEP Tidal		Funding for defences?	Notes
			FZ2	FZ3	0.1 % AEP SW	250m	500m	Defended	Un-defended		
(H)											
GTRA (I)		5.8	0	0	3.9	No	No	None	None	N/A	
GT17		0.7	0	0	0	No	No	None	None	N/A	On a dry island, will require a FWEP
GT35		0.2	0	0	0	No	No	None	None	N/A	
GT37		0.4	0	0	0	No	No	None	None	N/A	
GT38		1.1	0	0	0.6	No	No	None	None	N/A	
GT20	B	0.1	0	0	0.8	No	No	None	None	N/A	
GT26	C	0.4	0	0	0	No	Yes	Some	Most	No	At risk in undefended, close to defences- will require a FWEP
GT28		0.2	0	0	0	No	No	None	None	N/a	Potential Access Issues
GT31		0.0	0	0	0	No	No	None	None	N/A	
GTRA (J)		0.2	0	0	1.7	No	No	None	Some	No	
GT18	F	2.1	82	76	0.6	No	No	None	None	No	

Ref.	Cate-gory (A-H)	Area (ha)	% Site within extent			Within Xm of defences		Max Hazard in 0.1% AEP Fluvial/0.5% AEP Tidal		Funding for defences?	Notes
			FZ2	FZ3	0.1 % AEP SW	250m	500m	Defended	Un-defended		
GT21		0.2	42	25	0	No	No	None	None	No	
GTRA (C)		0.3	16.7	0	0	No	No	None	Some	No	
GT27	G/H	1.0	100	100	1.9	No	No	None	None	No	In IDB land, very close to watercourse
GT32		0.1	35	10	0	No	No	None	None	No	
GT42		0.0	100	100	0	No	No	None	None	No	
GT43		0.0	100	100	0	No	No	None	None	No	
GT59		0.3	100	100	5.4	No	No	None	None	No	
The sites in Category H below are those with the highest risk from flooding. Due to the majority of these being already permitted, it is important to investigate whether existing mitigation measures are appropriate for an intensification and/ or extension of the site or whether new mitigation measures are required. These sites will only be considered appropriate for allocation if there is overwhelming justification to override such constraints. These reasons are likely to be linked to a lack of sequentially suitable sites and/ or a direct need arising from such sites											
GT01	H	3.0	100	100	3	No	No	Some	All	No	
GT02		0.5	100	100	0	No	No	Some	All	No	
GT03		0.2	100	100	0.7	No	No	None	All	No	

Ref.	Cate-gory (A-H)	Area (ha)	% Site within extent			Within Xm of defences		Max Hazard in 0.1% AEP Fluvial/0.5% AEP Tidal		Funding for defences?	Notes
			FZ2	FZ3	0.1 % AEP SW	250m	500m	Defended	Un-defended		
GT04		0.5	100	0	4.3	No	No	None	Most	No	
GT05		0.2	100	0	17.5	No	No	None	Most	No	
GT07		1.0	100	100	1.4	No	No	None	All	No	
GT08		1.2	100	100	0.1	No	No	None	Most	No	
GT09		0.1	100	98	1.2	No	No	None	Most	No	
GT10		0.3	100	99	18.5	No	No	None	Most	No	
GT11		0.2	100	49	0	No	No	None	Most	No	
GT13		0.9	100	100	5.0	No	No	None	Most	No	
GT14		1.0	100	100	4.2	No	No	None	Most	No	
GT15		0.3	100	100	0.3	No	No	None	All	No	
GT16		1.3	99	11	1.5	Yes	Part	Some	Most	No	
GT29		0.0	100	100	0	No	No	All	All	No	
GT30		0.1	100	100	0	No	No	None	All	No	
GT33		0.2	100	100	2.2	No	No	None	Most	No	
GT41		0.1	100	100	2.3	No	No	None	Most	No	
GT52		0.5	100	100	7	No	No	Most	All	No	
GT53		0.3	100	100	0	No	No	None	Most	No	
GT56		1.6	68	0	4.1	No	No	None	Most	No	

Ref.	Cate-gory (A-H)	Area (ha)	% Site within extent			Within Xm of defences		Max Hazard in 0.1% AEP Fluvial/0.5% AEP Tidal		Funding for defences?	Notes
			FZ2	FZ3	0.1 % AEP SW	250m	500m	Defended	Un-defended		
GT58		0.1	100	100	0	Yes	Yes	Most	All	No	
GT60		0.4	100	100	6.1	No	No	All	All	No	
GT62		0.3	100	100	22.5	No	No	Most	All	No	
GT63		0.8	100	100	0.3	No	No	All	All	No	
GT65		0.7	100	100	0.1	Yes	Yes	None	All	No	
GTRA (D)		0.3	100	100	1.1	No	No	Some	All	No	
GTRA (G)		1.1	100	100	6.1	No	No	None	Most	No	

B Site Summary Tables



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