

Stage 1b Strategic Flood Consequences Assessment (SFCA) for Llanelli, Burry Port and Surrounding Areas

Site Specific Reports

Carmarthenshire County Council

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Notice

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List of Acronyms

AP	– Annual Probability
CCC	– Carmarthenshire County Council
DAM	– Development Advice Map
FCA	– Flood Consequence Assessment
LDP	– Local Development Plan (note CCC are currently preparing a Revised LDP).
LLFA	– Lead Local Flood Authority
LPA	– Local Planning Authority
NRW	– Natural Resources Wales
PPW 10	– Planning Policy Wales (10th edition)
SAB	– Sustainable Drainage Approval Body
SFCA	– Strategic Flood Consequence Assessment
SuDS	– Sustainable Drainage Systems
TAN 15	– Technical Advice Note 15: Development and Flood Risk

1. Introduction

1.1. Background to the Stage 1b Strategic Flood Consequences Assessment

Carmarthenshire County Council's (CCC) Revised (Replacement) Local Development Plan (LDP) is due to be adopted in 2021. Strategic Flood Consequences Assessments (SFCAs) support the LDP process by enabling flood risk to be better understood and managed from an early stage. Ultimately, the aim is to steer development away from areas at higher risk of flooding and deliver sustainable developments.

This Stage 1b SFCA follows on from the Carmarthenshire and Pembrokeshire Stage 1 SFCA¹. The Stage 1 SFCA was a high-level screening study that provided the Local Planning Authorities (LPA) with information about the extent and nature of flood risk at the sites proposed for inclusion in their LDPs. It also set out the process by which SFCAs can support development in accordance with the requirements of national policy regarding flood risk.

This Stage 1b SFCA builds upon the findings of the Stage 1 SFCA, looking in detail at selected Candidate Sites and existing LDP allocated sites in Llanelli, Burry Port and the surrounding areas. Four potential Gypsy and Traveller sites within this same region have also been considered.

This will provide further context and clarity to CCC, to assist in making sound Plan-level allocations.

1.2. Approach

In general, the sites were selected for inclusion in the Stage 1b assessment on the basis of their categorisation in the Stage 1 study. The objective screening undertaken in Stage 1 had flagged up several sites as potentially affected by flood risk to varying degrees.

The Stage 1b exercise has looked at these sites individually in order to improve the understanding of flood risk, and to search for additional existing sources of information that would not have been identified in the map-based screening assessment of Stage 1.

The primary source of existing information in support of this study was CCC Planning Portal. For sites which had a planning reference number, this data source was searched for relevant supporting documentation, including:

- Flood Consequence Assessments;
- Drainage Strategy reports;
- Hydraulic modelling reports;
- Stakeholder correspondence relating to flood risk (e.g. from Natural Resources Wales or CCC [CCC being responsible for Ordinary Watercourses as the Lead Local Flood Risk Authority]).

For the sites that did not have a planning reference number, the Stage 1b exercise has provided additional context and clarity regarding the nature of the flood risk with detailed site-specific figures and narratives.

In addition, a workshop was held with Planning Officers from CCC in order to gather further information and background to support the information found on the portal.

For all sites, potential considerations for the type of development (i.e. Highly Vulnerable or Less Vulnerable) are included in the narratives. Table 1-1 below clarifies which developments are considered Highly Vulnerable or Less Vulnerable.

¹ Atkins, September 2019

Table 1-1 Example Development Types based on TAN 15.

Classification	Development Example
Highly Vulnerable	<ul style="list-style-type: none"> • All residential premises (including hotels and caravan parks), • Public buildings (e.g. schools, libraries, leisure centres), • Especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators) • Waste disposal sites.
Less Vulnerable	<ul style="list-style-type: none"> • General industrial, employment, commercial and retail development, • Transport and utilities infrastructure • Car parks • Mineral extraction sites and associated processing facilities, excluding waste disposal sites.

1.2.1. Refinements in the Stage 1b Approach

In the Stage 1 SFCA, the future climate change scenario for the extreme tidal flood was represented by a 7-metre contour mapped across the extent of the study area. The rationale behind this methodology was explained in the Stage 1 SFCA report.

The figures produced for the Stage 1 SFCA utilised the 7-metre contour, in conjunction with 50-metre resolution LiDAR. This was appropriate for the regional overview the Stage 1 study provided.

For the Stage 1b SFCA, the 7m contour dataset was regenerated over 1-metre resolution LiDAR data, available on the Welsh Government LLE² portal. This greater resolution data was considered more appropriate for the extra detail provided on the site-specific figures produced for the Stage 1b SFCA.

1.2.2. Document Structure

Each site will be accompanied by a narrative to provide the following information:

- A summary of the relevant documentation available on the CCC Planning Portal, including:
 - Flood Consequence Assessments (FCA);
 - Drainage Strategy reports, and;
 - Correspondence from NRW.
- An overview of the potential implications for the type of proposed development or land use.

The narratives itemise the documents available for each site, which are relevant to flood risk issues. If there was correspondence from NRW to confirm that the development proposals have been accepted, this has been noted in the narratives.

The relevance of the studies, in terms of how recently they have been completed, has been commented upon, and high-level recommendations made in regard to the further work required to support progress of a development, based on its land use type and vulnerability.

² <http://lle.gov.wales/Catalogue/Item/LidarCompositeDataset/?lang=en>

2. Burry Port

2.1. Burry Port Development Masterplan

2.1.1. 2014 Masterplan Work

A development masterplan has been completed for Burry Port, which aims to regenerate the brownfield sites in the harbour/docks area. NRW received five separate FCAs for sites in the area in July 2014; it assessed the flood risk at each site as if they were standalone developments. The following information was found by searching for planning reference S/30678 (part of candidate site SR/016/012 - Former Grillo Site).

NRW's correspondence, dated September 2014, highlighted that the Burry Port masterplan includes the following sites, which were also included in the list provided by CCC for assessment in the Stage 1b SFCA.

- SR/016/012
- SR/016/013
- SR/016/014

There is a hydraulic model for the masterplan that incorporates the sites listed above. Due to the limited information on the model extent, it is difficult to see how much of SR/016/011 is included in the model.

This model, which is a 1D/2D ESTRY TUFLOW model was created in a joint venture between NRW and CCC in early 2014. The model was deemed acceptable by NRW.

This model has been used under licence by a third party to assess the flood risk to the sites that were included in the masterplan. This involved the assessment of blockage scenarios and extreme tidal events.

NRW accepted³ that the modelling approach was robust and the assessment of the blockage scenarios and extreme events, including climate change, satisfy TAN 15.

For these sites, mitigation scenarios have also been suggested and modelled. NRW is noted to accept that the proposals acceptably manage associated flood risk.

2.1.2. 2018 Masterplan Update

An updated FCA for the Burry Port masterplan was undertaken in November 2018. Reference is made to the section 73 planning applications in this regard. -

The FCA does not demarcate a clear site boundary, making it difficult to directly attribute sites in the LDP with this FCA. This FCA simply assessed recent flood maps from NRW and did not involve updating the existing hydraulic model. The 2018 FCA noted that the presumed 100 year lifespan of the development now extends beyond 2114, as previously assessed in the earlier FCA. Thus, a 14.5 mm/yr. sea level rise was added to the 2014 estimate, resulting in the recommendation to raise proposed development areas to 7.18 AOD.

Reference should be made to the planning position on the masterplan sites. The Committee Reports / Minutes of the Planning Committee meetings of 30 May 2019 (applications S/38105 and S/38107) and 19 September 2019 (applications S/38106 and S/38251) are directly relevant.

³ NRW Consultation Response reference SH/2014/117233/01-L01 (CCC Planning Portal)

2.2. SR/016/007 (Residential)

2.2.1. Summary of Stage 1 SFCA

The Stage 1 SFCA found that up to 91% of the area of site 016/007 could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change). As a result of this, it was categorised as a High-Risk site in the initial screening (as indicated by red colouring on the accompanying Stage 1 Map). The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

2.2.2. Summary of Third-Party Assessments and Planning Status

Full planning permission was given to the site in December 2018. The planning application shows that the site is located in Zone A of the DAM maps. Therefore, in accordance with TAN15, it is considered to be at little or no risk of fluvial or tidal/ coastal flooding. Consequently, the justification test is not applicable and there is no need to consider flood risk further.

A planning application form submitted in December 2018 stated that site was not within an area at risk of flooding.

2.2.3. NRW Correspondence

NRW responded to the application in January 2019 and did not have any comments pertaining to flood risk. However, an issue was raised with potential land contamination issues.

NRW recommends that surface water is managed sustainably in order to avoid potential pollution incidents to the Burry inlet. This is due to previous incidents of pollution at the site.

2.2.4. Recommendation for LDP

According to TAN15, the site's location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

The site is expected to be affected by extreme tidal flooding in the future due to the predicted effects of climate change. The implications of this risk are dependent on the nature of updates to national policy on development and flood risk, which are expected to be implemented within the cycle of developing the LDP.

2.3. SR/016/011 (Mixed Use)

2.3.1. Summary of Stage 1 SFCA

The Stage 1 SFCA found that up to 72% of the area of the site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change). The site contains a strip of Flood Zone 2, and there are areas of surface water flood risk.

As a result of this, it was "Red" and categorised as a High-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

2.3.2. Summary of Third-Party Assessments and Planning Status

There is no site-specific relevant planning reference for 016/011, but it did form part of Adopted LDP allocation, reference T2/1/MU1. This allocation also included site SR/016/14 (see section 2.6). Information was found on the Planning Portal relating to SR/016/014, but this was not found to be directly relevant to SR/016/011.

The Masterplan FCA model did not specifically include SR/016/011, however, figures in that document included some of the surrounding area. From this, it was possible to deduce that SR/016/011 was in an area affected by the 0.5% annual probability (AP) event in the future.

2.3.3. NRW Correspondence

There is evidence of hydraulic modelling and FCA's undertaken for a number of sites in this area. However, the flood risk figures available on the Planning Portal do not extend to cover this site in detail.

2.3.4. Recommendation for Revised LDP

The majority of the site is in Zone A, however it does contain a linear strip of DAM Zone C2 within its boundary. Whilst this covers a small proportion of the overall development area, it would likely trigger the requirement for an FCA for the whole development. This could preclude the consideration of Highly Vulnerable developments. However, for inclusion in the Revised LDP, it is understood that the site is earmarked for Less Vulnerable development. It is recommended that the Plan description under any mixed-use allocation description clarifies that the focus would be on Less Vulnerable Developments.

Drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

The site is expected to be affected by extreme tidal flooding in the future (i.e. due to the predicted effects of climate change). The implications of this risk are dependent on the nature of updates to national policy on development and flood risk, which are expected to be implemented within the cycle of developing the Revised LDP.

2.4. SR/016/012 (Residential)

2.4.1. Summary of Stage 1 SFCA

The Stage 1 SFCA found that up to 88% of the area of the site could be affected by extreme tidal flooding in the future (i.e. the 0.1% AP event including climate change). The site was also shown to have a small number of isolated pockets of surface water flooding.

As a result of the indicative extreme tidal flood, the site was "Red" and categorised as a High-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

2.4.2. Summary of Third-Party Assessments and Planning Status

This site was one of the sites covered by the Masterplan FCA submitted in August 2014. This utilised the NRW/ CCC a 1D/2D ESTRY TUFLOW hydraulic model for the Burry Port masterplan. The model was updated to assess extreme tidal events and blockage scenarios in support of TAN15 requirements for the FCA. A Drainage Strategy document was also submitted.

The FCA confirms that the site is at risk of flooding from the 0.5% AP tidal event in the future (i.e. with climate change). The flooding is predicted to reach depth of 100mm along the extreme western boundary of the site. For the extreme event (0.1% AP) in the future, flooding is predicted within the northern and southern portions of the site up to a maximum depth of approximately 300mm.

The proposals included a 7.1mAOD development plateau, which was deemed to mitigate the effects of flooding at the site. Whilst this allowed the development site to be flood free, it did incur a small increase in flood risk to the road (B4311) to the west of the site and site SR/016/014. These impacts would need to be considered further in any design development for the site.

As stated in 2.1.2, reference is made to the planning position on the masterplan sites.

2.4.3. NRW Correspondence

NRW responded to the application in September 2014 and March 2015. In principle, it did not object to the proposed development, but did outline some comments and conditions.

NRW did not object to the Masterplan FCA and accepted the supporting hydraulic modelling.

2.4.4. Recommendation for Revised LDP

According to TAN15, the site's location in Zone A would normally lead to the conclusion that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further. However, the Stage 1 SFCA showed that the site is expected to be affected by extreme tidal flooding in the future due to the predicted effects of climate change.

A detailed site-specific FCA has been prepared for this site (Burry Port Masterplan) which includes a proposed mitigation strategy. Correspondence from NRW, dated September 2014, indicates that this was accepted. This included mitigation in the form of a proposed development plateau of 7.1mAOD. It is noted that this would be above the Stage 1 SFCA prediction of the extreme tidal flooding in the future.

Future development proposals for this site would need to consider the site's drainage system, surface water flooding and ordinary watercourses in the design development.

2.5. SR/016/013 (Live-work)

2.5.1. Summary of Stage 1 SFCA

The Stage 1 SFCA found that up to 84% of the area of the site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual probability event including climate change).

As a result of the indicative extreme tidal flood, the site was "Red" and categorised as a High-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

2.5.2. Summary of Third-Party Assessments and Planning Status

This site is included within the Masterplan for Burry Port. It was a part of an initial masterplan in 2014, which was accompanied by an FCA. The FCA and associated modelling work was accepted by NRW in 2014³.

As stated in 2.1.2, reference is made to the planning position on the masterplan sites.

2.5.3. NRW Correspondence

There is no site-specific correspondence from NRW relating to flood risk. However, the Masterplan FCA from 2014 was deemed to be a robust assessment of flood risk and modelling.

Correspondence from NRW, dated December 2018, advises that additional survey work may be required to ascertain if the conclusions in any reports are still an accurate reflection of the conditions on site and to inform any recommendations and/or mitigation that may be required.

2.5.4. Recommendation for Revised LDP

According to TAN15, the site's location in Zone A would normally lead to the conclusion that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further. However, the Stage 1 SFCA showed that the site is expected to be affected by extreme tidal flooding in the future due to the predicted effects of climate change.

A detailed site-specific FCA has been prepared for this site (Burry Port Masterplan) which includes a proposed mitigation strategy. Correspondence from NRW, dated September 2014, indicates that this

was accepted. This included mitigation in the form of a proposed development plateau of 7.1mAOD. This is above the predicted extreme future tidal flood level used in the Stage 1 SFCA screening.

Drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

2.6. SR/016/014 (Mixed Use)

2.6.1. Summary of Stage 1 SFCA

The site is adjacent to the boundary of development advice map Zone C2. When sites are close to the C2 boundary, NRW could request an FCA in order to assess the potential consequences of climate change.

The Stage 1 SFCA has provided an initial assessment of this, indicating that that up to 65% of the area of the site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change).

As a result of the indicative extreme tidal flood, the site was “Red” and categorised as a High-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

The site was also shown to have an isolated pocket of surface water flooding.

2.6.2. Summary of Third-Party Assessments and Planning Status

Site SR/016/014 was included in the Masterplan FCA and assessed for flood risk in 2014. This was a part of the previous planning application (S/30597).

The FCA was accepted by NRW, along with the hydraulic model that covers the site, in 2014.

As stated in 2.1.2, reference is made to the planning position on the masterplan sites.

2.6.3. NRW Correspondence

Although an FCA and model was accepted in 2014, NRW stated in February 2019 that additional survey work may be required to ascertain if any conclusions from the 2014 assessment are still an accurate representation of the site conditions and potential requirements for mitigation.

2.6.4. Recommendation for Revised LDP

According to current TAN15 guidance, the site’s location in Zone A would normally lead to the conclusion that the justification test is not applicable, and there is no need to consider fluvial or tidal/coastal flood risk further. However, the Stage 1 SFCA showed that the site is expected to be affected by extreme tidal flooding in the future due to the predicted effects of climate change.

A detailed site-specific FCA has been prepared for this site (Burry Port Masterplan) which includes a proposed mitigation strategy. Correspondence from NRW, dated September 2014, indicates that this was accepted. This included mitigation in the form of a proposed development plateau of 7.1mAOD. It is noted that this would be above the Stage 1 SFCA prediction of the future extreme tidal flood level.

Drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

3. Llanelli

3.1. SR/086/002 (Residential)

3.1.1. Summary of Stage 1 SFCA

Isolated pockets of surface water flood risk were shown within the proposed development outline of the site. This was found to cover approximately 7% of the total area, therefore the site was given a “Yellow” Medium risk categorisation in the Stage 1 SFCA.

The site is adjacent to Flood Zone 2/ DAM Zone C2. At this location, the Zone 2/ C2 flood risk is predominantly associated with the Cille Stream, which is a Main River.

The Zone 2/ C2 outline does not take account of climate change; however, the effect of climate change is not applicable when considering extreme flood outlines (0.1% AP) for fluvial flooding.

The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.1.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.1.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.1.4. Recommendation for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

3.2. SR/086/069 (Mixed Use)

3.2.1. Summary of Stage 1 SFCA

A significant proportion of the site boundary abuts NRW Flood Zone 2/ DAM C2 Zone (FZ2/C2), and the boundary that has been set for the site encroaches into the FZ2/C2 area.

The Stage 1 SFCA assessment of potential tidal flood risk with climate change impacts has shown that up to 65% of the site area could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change). The site also has some areas of surface water flood risk at its northern end.

As a result of the indicative extreme tidal flood, the site was “Red”, and categorised as a High-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.2.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.2.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.2.4. Recommendation for Revised LDP

The south-facing boundary of the proposed development site is within FZ2/C2. This would likely trigger the requirement for an FCA for the whole development. Highly Vulnerable developments could not be considered in any FZ2/C2 zone.

For inclusion in the Revised LDP, it is understood that the site would be considered for “Mixed Use - visitor economy, heritage and leisure”. Further clarity on the type of development would be needed in order to identify if Highly Vulnerable development was being considered, as the DAM C2 Zone status could affect this. It is recommended that the Plan description under any mixed-use allocation description clarifies that the focus would be on Less Vulnerable Developments.

The majority of the site is in Zone A. However, the site could be affected by extreme tidal flooding in the future due to the predicted effects of climate change. The implications of this risk are dependent on the nature of updates to national policy on development and flood risk, which are expected to be implemented within the cycle of developing the Revised LDP.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

3.3. SR/086/064 (Mixed use)

3.3.1. Summary of Stage 1 SFCA

The southern boundary of the site sits within FZ2/C2 zone. Whilst this represents a small proportion (approximately 7%) of the total development area, it would likely trigger an FCA for the whole development site.

In addition, when sites are close to the FZ2/C2 boundary, NRW could request an FCA in order to assess the potential consequences of climate change. The Stage 1 SFCA has provided an initial assessment of this, indicating that that up to 44% of the area of site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change).

As a result of the indicative extreme tidal flood, the site was “Amber” and categorised as a Medium-High Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.3.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.3.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.3.4. Recommendations for Revised LDP

The southern boundary of the site sits within the FZ2/C2 zone, and the site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change) up to approximately 44% of its area.

The site’s encroachment into the FZ2/C2 zone would likely trigger the requirement for an FCA for the whole development. This could affect the consideration of Highly Vulnerable developments. For inclusion in the Revised LDP, the site has been promoted for “Leisure led Mixed Use”. Further clarity on the type of development would be needed in order to identify if Highly Vulnerable development was being considered, as the DAM C2 Zone status could preclude this in parts of the site.

Based on the current site boundary, the majority of the site is in Zone A. However, the site could be affected by extreme tidal flooding in the future due to the predicted effects of climate change.

The implications of this risk are dependent on the nature of updates to national policy on development and flood risk, which are expected to be implemented within the cycle of developing the Revised LDP.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

3.4. SR/086/066 (Residential)

3.4.1. Summary of Stage 1 SFCA

The Stage 1 SFCA found that up to 58% of the area of site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change).

The site was also found to have surface water flood risk affecting approximately 14% of the proposed development area.

As a result of the indicative extreme tidal flood, the site was “Red”, and categorised as a High-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.4.2. Summary of Third-Party Assessments and Planning Status

Despite the site’s location in Zone A, an FCA was completed for the site in March 2018.

The FCA noted that the site may be at risk of tidal flooding in the future and estimated a future extreme tidal flood level of at least 7.0mAOD. This is consistent with the outcome of the Stage 1 SFCA.

Recommendations for development included a preferred level of 7.45mAOD for a raised threshold, along with setting the development level of the site to 7.0 or 7.15mAOD.

During this Stage 1b SFCA, no evidence has been seen of a hydraulic modelling assessment of the impacts of the proposed mitigation. The third-party FCA suggests that due to the source of the flood risk being tidal, flood compensation “is not strictly considered as a requirement”.

3.4.3. NRW Correspondence

NRW responded to the application in April 2018 and January 2019.

NRW agrees with the consultant’s identification of potential future tidal flood risk due to sea level rise. In terms of the proposed mitigation, it is noted that the NRW response acknowledges the FCA’s suggestion to raise the site, indicating that it is “feasible”.

3.4.4. Recommendations for Revised LDP

The site is in DAM Zone A, but given its situation on the coastal frontage, it is foreseeable that tidal flooding would present a flood risk with the future impacts of climate change.

An FCA has been prepared for this site, and correspondence from NRW suggests that the development of this site, along with appropriate mitigations, is not objected to in principle.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

3.5. SR/086/048 (Strategic Site)

3.5.1. Summary of stage 1 assessment

The Stage 1 SFCA categorised this site as high risk (Red). The predominant flood risk was identified as tidal, with the indicative extent of the extreme tidal flood in the future affecting up to 58% of the site.

The site incorporates areas of Flood Zone 2/ DAM Zone C1, along with areas of surface water flood risk. There is also an area of DAM Zone C2 within the site boundary, although this appears to be related to the existing waterbody within the site and would not be developed. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

Candidate site area 086/048 is a larger site area than that area associated with outline planning permission in August 2019 under reference S/36948.

3.5.2. Summary of Third-Party Assessments and Planning Status

There is an extensive planning history for this site on the Planning Portal, which is in connection with the Wellbeing Development.

An FCA has been prepared for this development, and its results would be relevant for the whole of site SR/086/048. This FCA was undertaken in January 2018 and was supported by a hydraulic modelling assessment.

A hydraulic model has been developed to support the application.

3.5.2.1. Welsh Government Call-in

During the planning process, there has been request to “call in” the application for the Wellbeing development; one of the factors in this request was flood risk. In its response of July 2019, the Welsh Government has indicated its view that the LPA has considered the relevant documentation and matters.

Consequently, the Welsh Government has not called in the application for determination by Welsh Ministers, and it is now for the LPA to determine the application as it sees fit.

3.5.3. NRW Correspondence

NRW’s most recent comments on the planning portal were dated March 2019. Currently, there are a series of conditions to meet to satisfy NRW requirements, including comments on flood risk and the hydraulic modelling assessment:

- NRW has recommended that the hydraulic model is updated to reflect the final design of the development and to address the points made in its model review.
- NRW has acknowledged that the model gives a reasonable indication of the flood risk at the site and adjacent areas. However, there are aspects of the modelling that could be improved, and this should be included when the model is updated with the final design for the development.
- An updated FCA would be required and submitted for written approval along with the hydraulic model, in order to demonstrate that the site can satisfy the requirements of TAN 15.

3.5.4. Recommendations for Revised LDP

The site’s “Red” rating in the Stage 1 SFCA was attributed to the area of the site shown to be within the extent of the extreme tidal flood event in the future.

The site does contain FZ2, but this is DAM Zone C1. Under TAN15, Highly Vulnerable development is not explicitly prohibited in DAM Zone C1, but it must be subject to application of the justification test, including acceptability of consequences.

This process is currently ongoing, and there is evidence of consultation exchanges between NRW and the professional consultants, working towards an agreement with regards to the hydraulic modelling and the FCA. It is considered that the extreme tidal flood with climate change allowance that was used in the Stage 1 SFCA would be superseded by site-specific detailed hydraulic modelling.

The allocation of the site (based on site area S/36948) as a strategic site in the Revised LDP would be a reflection of the extensive evidence associated with that planning application. This would be a slightly refined area to that presented within the candidate site.

3.6. SR/086/024 (Residential focus)

3.6.1. Summary of Stage 1 SFCA

The site was found to be affected by a limited amount of surface water flood risk, affecting 6% of the total site area.

In future climate change scenarios, there was found to be a minor incursion of tidal flood risk in extreme (0.1% AP) events, within the south-western area of the site.

The site was “Yellow” and categorised as a Medium-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.6.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.6.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.6.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

The extreme tidal flood in the future (i.e. including climate change impacts), is predicted to encroach into a small area (<3%) of the site. There is a risk that this could trigger an FCA, which could affect the development potential of some areas within the site. The implications of this risk are dependent on the nature of updates to national policy on development and flood risk, which are expected to be implemented within the cycle of developing the Revised LDP.

3.7. SR/086/025 (and part of GA2/H30) (Residential)

3.7.1. Summary of Stage 1 SFCA

The Stage 1 SFCA indicated areas of surface water flood risk around the periphery of the development outline, amounting to approximately 6% of the total site area. There is an ordinary watercourse that runs along the site boundary to the north and west of the site.

The site was “Yellow” and categorised as a Medium-Risk site in the initial screening. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.7.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site. At the workshop with Planning Officers, it was stated that there is a current Pre-Application Consultation (PAC) that is relevant to this site. A Drainage Strategy report has been prepared in support of this.

3.7.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.7.4. Recommendations for Revised LDP

According to TAN15, the site's location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

3.8. SR/086/055 (GA2/MU4) (Mixed use, including residential)

3.8.1. Summary of Stage 1 SFCA

The eastern boundary of the site follows the outline of the FZ2/C2 zone. Where sites are close to the FZ2/C2 boundary, NRW could request an FCA in order to assess the potential consequences of climate change.

The Stage 1 assessment indicated that that up to 42% of the area of site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change). The site was "Amber" and categorised as a Medium-High risk site. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

The central area of the site, and areas surrounding the site, are affected by surface water flood risk.

3.8.2. Summary of Third-Party Assessments and Planning Status

A planning application was submitted in support of a retail development within part of this site, which was accompanied by an FCA and hydraulic modelling. The development was classed as Less Vulnerable, and therefore not strictly prohibited from DAM Zone C2.

3.8.3. NRW Correspondence

As of 10th July 2019, NRW has stated that it is unable to comment on the technical assessment supporting the proposed development, due to its reliance on out of date model information.

3.8.4. Recommendations for Revised LDP

According to TAN15, the site's location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, the proximity of the FZ2/C2 Zone boundary raises a significant chance that NRW would request an FCA for the site to ensure potential flood risk issues in the future have been assessed and understood. The Stage 1 SFCA has provided an initial assessment of this, indicating that that up to 42% of the site could be affected by extreme tidal flood events in the future. In addition to this, the NRW flood maps suggest that the current FZ2/DAM C2 Zone adjacent to this site could be attributed to fluvial flooding from the Afon Dafen.

Furthermore, OS Maps show ordinary watercourses along the southern boundary through the centre of this site. Therefore drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

The potential risk for extreme tidal flooding in the future is noted. Reference is made to updates to national policy on development and flood risk, which are expected to be implemented within the cycle of developing the Revised LDP. In acknowledgement of this, there may be scope to review the expectation placed upon the site in terms of housing numbers in the revised LDP.

Policy updates notwithstanding, it is advised that management of flood risk is likely to be a significant amount of the work involved in progressing development at this site. This is due to the complex interactions of flood risks, from tidal, main river and ordinary watercourse sources.

Future proposals to develop this site should make allowances for a significant amount of hydraulic modelling, flood risk assessment and consultation with NRW and the Local Authority.

3.9. SR/086/061 (Residential)

3.9.1. Summary of Stage 1 SFCA

The Stage 1 SFCA indicated that surface water flood risk affects the local roads around this site. There is some incursion of surface water flooding through the site itself, originating from the road Ynys Las, on its north-eastern boundary. This affects approximately 14% of the total development area.

The site was “Yellow” and categorised as a Medium-Risk site, based on the surface water flood risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

No other sources of flood risk were shown to affect this site in the Stage 1 SFCA.

3.9.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.9.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.9.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

3.10. SR/086/074 (Residential)

3.10.1. Summary of Stage 1 SFCA

The site is surrounded by NRW Flood Zone 2 and DAM Zone C1. These zones encroach into the development outline slightly, at the northern and southern boundaries of the site. Zone C1 indicates an area that is served by significant infrastructure, including flood defences. A small isolated pocket of surface water flood risk was noted in within the site.

The Stage 1 assessment indicated that that up to 28% of the area of site could be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change). The site was “Amber” and categorised as a Medium-High Risk site. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.10.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.10.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.10.4. Recommendations for Revised LDP

The encroachment of FZ2/ DAM Zone C1 would trigger an FCA for development of the site.

This site is earmarked for Residential development; i.e. Highly Vulnerable. Under TAN15, Highly Vulnerable development this is not explicitly prohibited in DAM Zone C1, but it must be subject to

application of the justification test, including acceptability of consequences. This would require an assessment of the impacts of climate change over the lifetime of the development. The Stage 1 SFCA has provided an indication of the extent of extreme tidal flooding in the future for this site.

Drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

3.11. GA2/H9 (Residential)

3.11.1. Summary of Stage 1 SFCA

The Stage 1 SFCA indicated that the entire site area could be affected by extreme tidal flooding in the future. Surface water flood risk is also shown to affect 76% of the total site area.

The site was “Red” and categorised as High Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.11.2. Summary of Third-Party Assessments and Planning Status

The planning application for this site, reference S/14791, originated from 2006. Full planning permission was granted for the site in July 2016.

The Planning Consent documentation made two references relevant to flood risk and drainage: a) that it complied with Policy SP2 of the Adopted LDP as “the proposed development is resilient to the impact of climate change and accords with the provisions of TAN15”; and b) that no surface drainage from the site could connect into existing highway and surface water drains.

No documentary evidence of an FCA for this site was found on the Planning Portal. Therefore, the Stage 1b SFCA has not identified any information regarding flood levels, which would enable refinement of the Stage 1 indicative extent of the extreme tidal flood in the future. Although it is noted that the Stage 1 indicative extent does not take account of existing flood defences.

No Drainage Strategy document supporting the application was found on the Planning Portal.

3.11.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.11.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, provisions for surface drainage would need to be considered in the development of any proposals for this site. These would need to ensure that surface drainage is not connected to the existing networks.

The indicative outline of extreme tidal flood risk in the future (i.e. including climate change impacts), is shown to incorporate the entire site. In addition, over three-quarters of the site is subject to surface water flood risk. The implications of this flood risk will depend on the nature of updates to national policy on development and flood risk. Whilst the site’s current planning permission is noted, the development is yet to commence at the time of writing.

3.12. GA2/H34 (Residential)

3.12.1. Summary of Stage 1 SFCA

The Stage 1 SFCA showed a small amount (6% of total site area) of surface water flood risk affecting this site. No other sources of flood risk were noted.

The site was “Yellow” and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 1.

3.12.2. Summary of Third-Party Assessments and Planning Status

A planning reference was provided for this site, and the Planning Portal was searched for relevant documents. No FCA was found on the portal.

There is no history of a planning permission at the site.

3.12.3. NRW Correspondence

There is no correspondence from NRW relating to flood risk at the site.

3.12.4. Recommendation for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

3.13. GA2/H35 (part) (residential)

3.13.1. Summary of Stage 1 SFCA

The whole Adopted LDP allocation was assessed at Stage 1, however only that area subject to planning reference S/34991 was assessed as part of this Stage 1b SFCA. The site-specific Stage 1b Flood Risk Map for this site (GA2/H35 part) is provided in Appendix 1.

The western quarter of the site is substantially affected by surface water flood risk. There are smaller areas of surface water flood risk at the northern and southern boundaries, resulting in a total of 30% of the site area being at risk of surface water flooding.

The south-eastern extremity of the site just encroaches into the indicative extent of the extreme tidal flood in the future.

3.13.2. Summary Third-Party Assessments and Planning Status

It is understood that this site was originally part of a much larger development area that extended from Parc y Scarlets in the west, to the A484/ Erwlas junction in the east. Furthermore, it is believed that despite the site’s Zone A location, NRW required an FCA to support the proposed development plans. The larger site area was allocated in the Adopted LDP.

This Stage 1b assessment has only focussed on that part of the allocation that is covered by S/34991 – 94 units. It has not reviewed documents pertaining to the previous development application on the Planning Portal. However, it is noted NRW provided the Llanelli Estry TUFLOW hydraulic model for use in assessing the flood risk previously.

3.13.3. NRW Correspondence

NRW's most recent correspondence on the Planning Portal was dated April 2017. This was in connection to the previous proposals for development of the wider site. It is understood that there were concerns in relation to that area beyond S/34991.

3.13.4. Recommendations for the Revised LDP

According to TAN15, the site's location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further. However, reference is made to the planning history – particularly in relation to the wider site area as allocated in the Adopted LDP.

The Stage 1b SFCA has provided an indication of the potential extent of the extreme tidal flood in the future. Only the south-eastern extreme tip of the site's outline was found to be within this extent.

It is considered that the substantial reduction in proposed development area, concentrating on the western portion of the site, along with the Stage 1b indication of the extreme tidal flood extent in the future, should reduce significance of flood risk as a development constraint. This also acknowledges the position in relation to planning reference S/34991 – 94 units.

Drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

3.14. GA2/H37 (Residential)

3.14.1. Summary of Stage 1 SFCA

The Stage 1 SFCA indicated a risk of surface water flooding at this site. It is considered that this risk is predominantly related to an ordinary watercourse that runs through the centre of the site. This affects approximately 13% of the total area. No other sources of flood risk were reported for this site.

The site was "Yellow" and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

3.14.2. Summary of Third-Party Assessments and Planning Status

A planning reference was provided for this site. Within the supporting documents on the Planning Portal, there was a Drainage Strategy document completed in October 2018.

A high-level assessment of flood risk seems to have been undertaken, based on NRW flood risk maps.

3.14.3. NRW Correspondence

NRW correspondence was located on the Planning Portal, but this did not address issues associated with flood risk.

3.14.4. Recommendations for Revised LDP

According to TAN15, the site's location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site. It is assumed that the relevant issues have been addressed in the Drainage Strategy that has been produced in connection with this site.

3.15. GA2/H21 (Residential)

3.15.1. Summary of Stage 1 SFCA

The Stage 1 SFCA showed a small amount (approximately 6% of the total area) of surface water flood risk affecting this site. No other sources of flood risk were noted.

The site was “Yellow” and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

3.15.2. Summary of Third-Party Assessments and Planning Status

A planning reference was provided for part of this site (S/36707). The Planning Portal was searched, and no FCA or evidence of hydraulic modelling in support of the application was found.

A Drainage Strategy report was completed in December 2017.

3.15.3. NRW Correspondence

No correspondence from NRW in connection with flood risk was found on the Planning Portal.

3.15.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site. It is assumed that the relevant issues have been addressed in the Drainage Strategy that has been produced in connection with this site.

3.16. GA2/H38 (Residential)

3.16.1. Summary of Stage 1 SFCA

The Stage 1 SFCA showed that 49% of the site is at risk of surface water flooding. The source of this risk is likely to be an ordinary watercourse that flows in a culvert beneath the site.

The site was “Amber” and categorised as Medium-High Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

3.16.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.16.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.16.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses – particularly the culvert in this instance – would need to be considered in the development of any proposals for the site.

3.17. SR/086/045 (Residential)

3.17.1. Summary of Stage 1 SFCA

The Stage 1 SFCA showed that up to 8% of the site is at risk of surface water flooding. The primary source of this flood risk appears to be connected with surface water flood risk to the adjacent A484.

The site was “Yellow” and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

3.17.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.17.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.17.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

3.18. GA2/MU2 (Mixed Use)

3.18.1. Summary of Stage 1 SFCA

The Stage 1 SFCA indicated that up to 67% of the area of the site would be at risk of flooding during an extreme tidal flood in the future.

The eastern boundary of the site follows the outline of the FZ2/C1 zone. Where sites are close to the FZ2/C1 boundary, NRW could request an FCA in order to assess the potential consequences of climate change.

The central area of the site, and areas surrounding the site, are affected by surface water flood risk.

The site was “Red” and categorised as High Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2. The site as currently allocated in the Adopted LDP includes an education focus along with an allowance for residential.

3.18.2. Summary of Third-Party Assessments and Planning Status

The site perimeter incorporates the Pen Rhos Primary School, which was opened in 2018.

Despite the site’s location in DAM Zone A, NRW requested an FCA for the school development. This was due to the site’s proximity to DAM Zones B and C1, and the potential effects of climate change over the lifetime of the development. Furthermore, being a primary school, it is Highly Vulnerable development.

The FCA concluded that the principal mechanism of flood risk was tidal. The estimated extreme (0.1% annual probability- AP) tidal flood level in 2115 (i.e. inclusive of climate change) for Llanelli was 6.93mAOD. This is broadly in line with the 7mAOD contour used in the Stage 1 SFCA as an indicator of extreme tidal flood extent with climate change allowance.

The FCA for the school undertook a more detailed assessment of tidal flood levels at the specific site by developing a 1D-2D ESTRY TUFLOW hydraulic model to represent the flood plain in the area. The resulting flood mapping outputs include the remainder (east side) of site GA2/MU2.

For a 0.1% AP flood in 2115, the predicted maximum flood level along Copperworks Road, to the north of the site, was 6.11mAOD.

The predicted 0.1% AP flood in 2115 was found to have a lesser extent than the 0.5% AP 2115 flood with the upper confidence interval. For the latter event, maximum predicted flood level was 6.31mAOD. Whilst this created some encroachment, the main part of the site remained unaffected.

The mapped flood extents indicate that, aside from very minor encroachments at the site's boundary, the remaining undeveloped portion of GA2/MU2 is expected to be flood free during a 0.1% AP flood event in 2115.

The 0.5% AP event in 2115 with upper confidence interval showed a slight increase in the amount of encroachment at the site boundary. However, it is considered that development of the vast majority of the site would be viable.

In relation to surface water drainage, the planning history records a number of exchanges of correspondence leading to the development of a suitable sustainable drainage design. It is assumed that this was concluded to the satisfaction of the relevant authority to allow the school to be constructed. In any event, site drainage would be a development-specific consideration to any future proposals for this site.

3.18.3. NRW Correspondence

Several items of correspondence with NRW in relation to this site are recorded on the Planning Portal. These relate to a range of issues, including flood risk.

There is a consultation response letter from NRW that makes reference to flood risk and appends a previous email with details of its review of the hydraulic modelling.

The response provided no Conditions predicated on flood risk. However, it did advise that a management plan should be developed for the site and that the school signed up to receive flood warnings from NRW to ensure sufficient warning in the event of a tidal flood. This was in light of flooding predicted to affect access/ egress routes to and from the site.

It should be assumed that similar recommendations would be made for any future development of the remainder of the site.

Contaminated land was a significant issue dealt with throughout the planning process. This would be considered as a potential constraint on the design of any sustainable drainage system for a future development that may rely on infiltration to ground.

3.18.4. Recommendation for Revised LDP

Due to the recent construction of Pen Rhos Primary School, there is a significant planning history that is relevant to the overall site.

The site is located in Zone A, but NRW required an FCA to take account of the potential impacts of climate change. This is consistent with the findings of the Stage 1 SFCA, which reported that the site was predicted to be at risk of flooding during an extreme tidal flood event in the future.

The hydraulic modelling undertaken in support of the school development considered flood risk in more detail than the screening exercise undertaken during the Stage 1 SFCA. The site specific FCA reported a maximum estimated flood level (2115) in this area of 6.31mAOD, compared with the 7mAOD extent assumed for the extreme tidal flood (with climate change) in the Stage 1 SFCA screening exercise. The opening of the school in 2018 would indicate that issues pertaining to flood risk were assessed and resolved to the satisfaction of NRW.

The remainder of the site that was not part of the school development presents a similar profile in terms of flood risk. Whilst it is closer to the FZ2/ DAM C1 Zone area than the school, the detailed FCA for the school did not indicate a higher level of flood risk in this area.

A sustainable surface water drainage strategy would need to be developed in support of any future proposals for this site. It should be noted that contaminated land is likely to be a significant consideration in the design of such proposals.

3.19. GA2/H27 (Residential)

3.19.1. Summary of Stage 1 SFCA

The Stage 1 SFCA showed that approximately 5% of the site was affected by the “SMP2 Flood Extent + 2m Sea Level Rise”. Therefore, it was “Yellow” and categorised as Medium Low Risk.

The SMP2 layer was incorporated in the Stage 1 SFCA as a component of the future extreme tidal flood risk screening boundary. As stated in Section 1.2.1, the Stage 1b SFCA has utilised the 7m AOD contour to indicate the potential extent of extreme tidal flooding in the future. This does not affect the proposed site.

The only source of flood risk found to affect the site from the Stage 1b SFCA was surface water flood risk, which affects 2% of the site. Based on this updated assessment, the site is categorised as Low Risk.

The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

3.19.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

3.19.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

3.19.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

4. Llangennech

4.1. SR/086/027 (Residential)

4.1.1. Summary of Stage 1 SFCA

The eastern boundary of the site is reasonably close to the FZ2/C2 zone. Where sites are close to the FZ2/C2 boundary, NRW could request an FCA in order to assess the potential consequences of climate change.

The Stage 1 SFCA indicated that that less than 10% of the area of site had the potential to be affected by extreme tidal flooding in the future (i.e. the 0.1% annual chance event including climate change).

Some minor incursions of surface water flood risk were shown within the site, affecting around 10% of the development area. These would need to be understood and addressed in the site's drainage strategy.

The site was "Yellow" and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

4.1.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

4.1.3. Correspondence from NRW

No correspondence from NRW was found relating to flood risk at the site.

4.1.4. Recommendation for Revised LDP

According to TAN15, the site's location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, the Stage 1 SFCA reported that a small portion of the site could be affected by extreme tidal flooding in the future due to the predicted effects of climate change. The implications of this risk are dependent on the nature of updates to national policy on development and flood risk, which are expected to be implemented within the cycle of developing the Revised LDP.

Drainage, surface water flooding and ordinary watercourses, would need to be considered in the development of any proposals for the site. The Nant Mwrwg is reasonably close to the eastern boundary of the site. This appears to have been included within NRW flood risk maps and DAMs but does not appear as a Main River on those maps.

4.2. GA2/H53 (Residential)

4.2.1. Summary of Stage 1 SFCA

The Stage 1 SFCA reported that north east portion of the site contained an area of surface water flood risk amounting to approximately 17% of the total site.

The site's southern boundary is adjacent to FZ2/ DAM Zone C2, neither of which account for the potential effects of climate change.

The Stage 1 SFCA assessed the potential impacts of climate change on the extreme tidal flood, and this was not found to encroach onto the proposed development site.

The site was "Yellow" and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

4.2.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

4.2.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

4.2.4. Recommendations for Revised LDP

According to TAN15, the site's location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, there is a risk that NRW could comment in relation to the site's proximity to FZ2/ DAM Zone C2. Further assessments could be required to understand nature/ implications of the flood risk on this site as indicated by the surface water flood map.

This site is located within the Loughor Estuary and close to the Afon Morlais. It could be complex to ascertain whether the predominant flood mechanism is tidal or fluvial. Further assessments could be required to understand the flood risk at this interface and the implications in terms of needing to assess potential climate change risks.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

4.3. SR/086/077 (Mixed Use)

4.3.1. Summary of Stage 1 SFCA

The Stage 1 SFCA indicated that there are pockets of surface water flood risk in the site, but these do not amount to more than 6% of the total development area.

The site is adjacent to FZ2/ DAM Zone C2. As the boundary has been set currently, a very small part of the site would be within Zone C2.

An assessment of the potential impacts of climate change on the extreme tidal flood event indicated that this would not create significant further encroachment into the site.

The site was "Yellow" and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

4.3.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

4.3.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

4.3.4. Recommendations for Revised LDP

According to TAN15, if the entire site was located in Zone A, the justification test would not apply, and there would be no need to consider fluvial or tidal/ coastal flood risk further. Whilst a very small part of this site is in current FZ2/ DAM Zone C2, which could potentially trigger an FCA, the area affected is less than 1% of the total site, and it is considered likely that this area would be left undeveloped.

There remains a risk that NRW could comment in relation to the site's proximity to FZ2/ DAM Zone C2 and request an FCA in order to assess the potential consequences of climate change.

This site is located high up in the Loughor Estuary, and it could be complex to ascertain whether the predominant flood mechanism is tidal or fluvial. Further assessments could be required to understand

the flood risk at this interface and the implications in terms of needing to assess potential climate change risks.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

4.4. SR/086/070 (Residential)

4.4.1. Summary of Stage 1 SFCA

The Stage 1 SFCA reported that approximately 28% of the site, concentrated in its southern portion, could be at risk of flooding in an extreme tidal event in the future. A significant area, (approximately 25%), is in existing FZ2/ DAM Zone C2.

The site boundary as currently set extends to the edge of the Afon Morlais.

The site was “Yellow” and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

4.4.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

4.4.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

4.4.4. Recommendations for Revised LDP

This site is proposed for Residential development, which is Highly Vulnerable and would not be permitted within the areas that are DAM Zone C2.

The FCA would likely need to cover the whole development to assess the implications of climate change. The Stage 1 SFCA has provided an initial indication of this, which showed that the risk profile of the site is does not change significantly with the impacts of climate change.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

5. Hendy

5.1. T3/7/H4 (Residential)

5.1.1. Summary of Stage 1 SFCA

The Stage 1 SFCA showed a linear strip of surface water flood risk at the eastern boundary of the site. This occupies around 9% of the total site area.

The site was “Yellow” and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

5.1.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site. It is noted however that there is planning history on the Adopted LDP site immediately adjacent to the north – (T3/7/h5).

5.1.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

5.1.4. Recommendation for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

6. Five Roads

6.1. SR/061/001 (Residential)

6.1.1. Summary of Stage 1 SFCA

The Stage 1 SFCA shows that 14% of the site is at risk of surface water flooding. Therefore, it was “Yellow”, and categorised as Medium risk.

The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

6.1.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

6.1.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

6.1.4. Recommendation for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

A drainage strategy, considering surface water flooding and ordinary watercourses amongst other sources of flooding would need to accompany the development of any proposals for the site.

7. Pwll

7.1. SR/086/037 (Residential related)

7.1.1. Summary of Stage 1 SFCA

The Stage 1 SFCA indicated a risk of surface water flooding at this site. It is considered that this risk is predominantly related to an ordinary watercourse that runs along the eastern boundary of the site. This affects approximately 10% of the total area. No other sources of flood risk were reported for this site.

The site was “Yellow” and categorised as Medium Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

7.1.2. Summary of Third-Party Assessments and Planning Status

No relevant planning applications have been submitted for this site.

7.1.3. NRW Correspondence

No correspondence from NRW was found relating to flood risk at the site.

7.1.4. Recommendations for Revised LDP

According to TAN15, the site’s location in Zone A indicates that the justification test is not applicable, and there is no need to consider fluvial or tidal/ coastal flood risk further.

However, drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site. In particular, there is a culvert inlet in the south-eastern tip of the site that may require a capacity assessment.

8. Traveller Sites

8.1. GTS1

8.1.1. Summary of Stage 1 SFCA

Up to 88% of the site area could be at risk during an extreme tidal flood in the future. The site boundary encroaches into FZ2/ DAM Zone C1, which affects 14% of the total site.

Whilst this site was not included in the Stage 1 SFCA, it has been assessed in the same way for this Stage 1b review. The site would be “Red” and categorised as High Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

8.1.2. Summary of Previous Assessments

No relevant planning applications have been submitted for this site.

8.1.3. Recommendation for Revised LDP

The site’s current location as partly within FZ2/ DAM Zone C1 would trigger an FCA for development of the site.

Gypsy and Traveller Sites are categorised as Highly Vulnerable development. It is noted that the bulk of the site is not impacted by Zone C1 at the present time. Under TAN15, Highly Vulnerable development is not explicitly prohibited in DAM Zone C1, but it must be subject to application of the justification test, including acceptability of consequences.

Any FCA would require hydraulic modelling to assess flood risks, along with an assessment of the residual design life and climate change resilience of the flood defences that currently serve this site.

In addition to this, site drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

8.2. GTS2

8.2.1. Summary of Stage 1 SFCA

The site is entirely within Flood Zone 2/ DAM Zone C1. The site is immediately adjacent to the Dafen, which is a Main River. A large portion of the site is also at risk of surface water flooding.

Whilst this site was not included in the Stage 1 SFCA, it has been assessed in the same way for this Stage 1b review. The site would be “Red” and categorised as High Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

8.2.2. Summary of Previous Assessments

No relevant planning applications have been submitted for this site.

8.2.3. Recommendation for Revised LDP

The site’s location in FZ2/ DAM Zone C1 would trigger an FCA for development of the site.

A Gypsy and Traveller Site would be considered Highly Vulnerable development. Under TAN15, Highly Vulnerable development is not explicitly prohibited in DAM Zone C1, but it must be subject to application of the justification test, including acceptability of consequences.

This would require an assessment of the impacts of climate change over the lifetime of the development. This would need to include an assessment of the residual design life and climate change resilience of the flood defences that currently serve this site.

The proximity of the Dafen, and the site's position immediately upstream of a culvert inlet would be major factors to analyse in a flood risk assessment for this site. The potential consequences of a blockage of the culvert would need to be included in the assessment.

Further to this, site drainage, surface water flooding and ordinary watercourses would need to be considered in the development of any proposals for the site.

8.3. GTS3

8.3.1. Summary of Stage 1 SFCA

The site is entirely within Flood Zone 2/ DAM Zone C1. A large portion of the site is also at risk of surface water flooding.

Whilst this site was not included in the Stage 1 SFCA, it has been assessed in the same way for this Stage 1b review. The site would be "Red" and categorised as High Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

8.3.2. Summary of Previous Assessments

No relevant planning applications have been submitted for this site.

8.3.3. Recommendation for Revised LDP

The site's location in FZ2/ DAM Zone C1 would trigger an FCA for development of the site.

A Gypsy and Traveller Site would be considered Highly Vulnerable development. Under TAN15, Highly Vulnerable development is not explicitly prohibited in DAM Zone C1, but it must be subject to application of the justification test, including acceptability of consequences.

This would require an assessment of the impacts of climate change over the lifetime of the development. This would need to include an assessment of the residual design life and climate change resilience of the flood defences that currently serve this site.

The site is situated amongst a complex network of ordinary watercourses and culverts. It is considered that analyses of these networks would be complex, and practical mitigation of the risk within the site boundary may be difficult to achieve.

Further to this, site drainage and surface water flooding would need to be considered in the development of any proposals for the site.

8.4. GTS4

8.4.1. Summary of Stage 1 SFCA

The site abuts Flood Zone 2/ DAM Zone C1. These zones do not take account of the potential impacts of climate change. Up to 30% of the site area could be at risk during an extreme tidal flood in the future.

Whilst this site was not included in the Stage 1 SFCA, it has been assessed in the same way for this Stage 1b review. The site would be "Amber" and categorised as Medium-High Risk. The site-specific Stage 1b Flood Risk Map for this site is provided in Appendix 2.

8.4.2. Summary of Previous Assessments

No relevant planning applications have been submitted for this site.

8.4.3. Recommendation for Revised LDP

The site's location adjacent to FZ2/ DAM Zone C1 would likely trigger an FCA for development of the site.

A Gypsy and Traveller Site would be considered Highly Vulnerable development. Under TAN15, Highly Vulnerable development is not explicitly prohibited in DAM Zone C1, but it must be subject to application of the justification test, including acceptability of consequences.

This would require an assessment of the impacts of climate change over the lifetime of the development. This would need to include an assessment of the residual design life and climate change resilience of the flood defences that currently serve this site.

Further to this, site drainage and surface water flooding would need to be considered in the development of any proposals for the site.

9. Conclusion

This Stage 1b Strategic Flood Consequences Assessment (SFCA) has provided an additional level of detail for 31 sites originally assessed in the Stage 1 SFCA.

The additional assessment has been carried out on the instruction of Carmarthenshire County Council (CCC), to support development of the Revised Carmarthenshire Local Development Plan (LDP). CCC instructed the work following the Stage 1 SFCA's screening-level risk assessment of a number of potential Revised LDP sites in Burry Port, Llanelli, Llangennech, Hendy, Five Roads and Pwll.

In addition to this, CCC also provided a list of four potential Gypsy and Traveller sites for similar assessment, which were not included in the Stage 1 SFCA.

CCC needed to understand the risk profile underlying the original sites' outcomes in the Stage 1 SFCA, and develop a similar understanding for the potential Gypsy and Traveller sites. This would provide CCC with justification to retain the sites in the Revised LDP or highlight the potential that flood risk could preclude inclusion.

CCC briefed Atkins to revisit the regional Stage 1 SFCA and assess these sites at a local level in what was termed a "Stage 1b" SFCA. This would be based on the same datasets as the Stage 1 SFCA, but provide an enhanced understanding of the nature of flood risk at an individual site level.

In addition, CCC provided planning references where available to support searches within the Planning Portal. This allowed the identification of relevant planning applications that could yield data on flood risk assessments that may have already been completed for a site. CCC also facilitated a workshop with its Planning Officers to support this element of the study.

For each site, a concise summary narrative has been written, which encapsulates the sites' positions with respect to flood risk and development under the following key points:

- The findings of the Stage 1 SFCA;
- A summary of relevant third-party assessments and the sites' current planning status;
- A summary of relevant correspondence from Natural Resources Wales (NRW);
- Recommendations for the Revised LDP.

In respect of the final key point above, the recommendations consider whether the Stage 1b SFCA has identified a risk that needs further consideration. The narratives include an overview on likely issues or challenges that may have to be resolved throughout the planning process. Any recommendations are in respect of compliance with the principles of Welsh Government policies on flood risk and development current **at the time of writing**. No recommendations have been made on the grounds of subjective flood risk assessments and the viability of developing any site included in this study.

Individual site figures have been produced to provide a clearer image of the nature of the flood risk shown to affect each site. A finer resolution LiDAR dataset was used to support this, giving clearer mapping of flood extents at a site level.

The Stage 1b SFCA concludes that challenges to future development on the grounds of flood risk vary considerably across the range of sites studied. Further flood consequence assessments to varying levels of detail and complexity will be required to support certain developments. Reference should always be made to national policy, most notably in the form of TAN 15.

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