

London Legacy Development
Corporation

Flood Risk Appraisal

Flood Risk Update based on new
Climate Change Modelling

Issue 02 | 5 July 2019

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 248753

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1 Introduction

Arup have been commissioned by the London Legacy Development Corporation Planning Policy and Decisions Team (LLDC) in its role as Local Planning Authority, to update the earlier flood risk review addendum report (dated October 2018) to take account of the latest flood risk mapping information. This is to support the preparation of the LLDC Draft Revised Local Plan (Regulation 19). This mapping includes the appropriate climate change allowance as recommended by the latest Environment Agency (EA) guidance.

In parallel with the above, a commentary has been made on the Sequential and Exception Tests for the adopted and proposed site allocations for which either outline planning permission has been granted, detailed consent obtained, or development has been completed. The commentary on Sequential testing of sites undertaken by LLDC is based on the Sequential and Exception tests undertaken in the Sites Report in August 2014. The full report can be found in Appendix B.

A formal Strategic Flood Risk Assessment (SFRA) has not been prepared for the draft revised Local Plan. It had been previously agreed with the EA that relying upon flood risk information prepared by the four London boroughs¹ within the LLDC area was both an appropriate and proportionate flood risk assessment approach when preparing the adopted Local Plan. A similar approach has therefore been undertaken when assessing the draft revised Local Plan allocations against the latest climate change allowance. The EA has once again agreed this is appropriate. Refer to Appendix A.

2 Description of Study Area

The adopted Local Plan² divides the LLDC area into 4 Sub-Areas (SA), and the Draft Revised Local Plan proposes 22 site allocations, shown in Figure 1. This diagram also indicates which of these site allocations are already subject to planning consent or have been developed. Site allocations that are yet to be developed and have no extant permission are shown in red. It is these site allocations or 'sites' that will be considered within this report and are listed below.

- SA 1.2 Hamlet Industrial Estate
- SA 2.4 Chobham Farm (new site allocation in Draft Revised Local Plan)
- SA 3.1 Stratford Town Centre West
- SA 3.4 Greater Carpenters District
- SA 3.6 Rick Robert's Way
- SA 4.1 Bromley-By-Bow
- SA 4.3 Pudding Mill

¹ The following four London boroughs fall within the LLDC area: London Borough of Tower Hamlets; London Borough of Newham; London Borough of Waltham Forest; and, London Borough of Hackney

² LLDC Local Plan 2015 to 2031 [https://www.queenelizabetholympicpark.co.uk/-/media/lldc/local-plan/adoption-july-2015/lldc_localplan_2015_interactive100dpi-\(4\).ashx?la=en](https://www.queenelizabetholympicpark.co.uk/-/media/lldc/local-plan/adoption-july-2015/lldc_localplan_2015_interactive100dpi-(4).ashx?la=en)

- SA 4.4 Three Mills (new site allocation in Draft Revised Local Plan)
- SA 4.5 Bow Goods Yard (new site allocation in Draft Revised Local Plan)

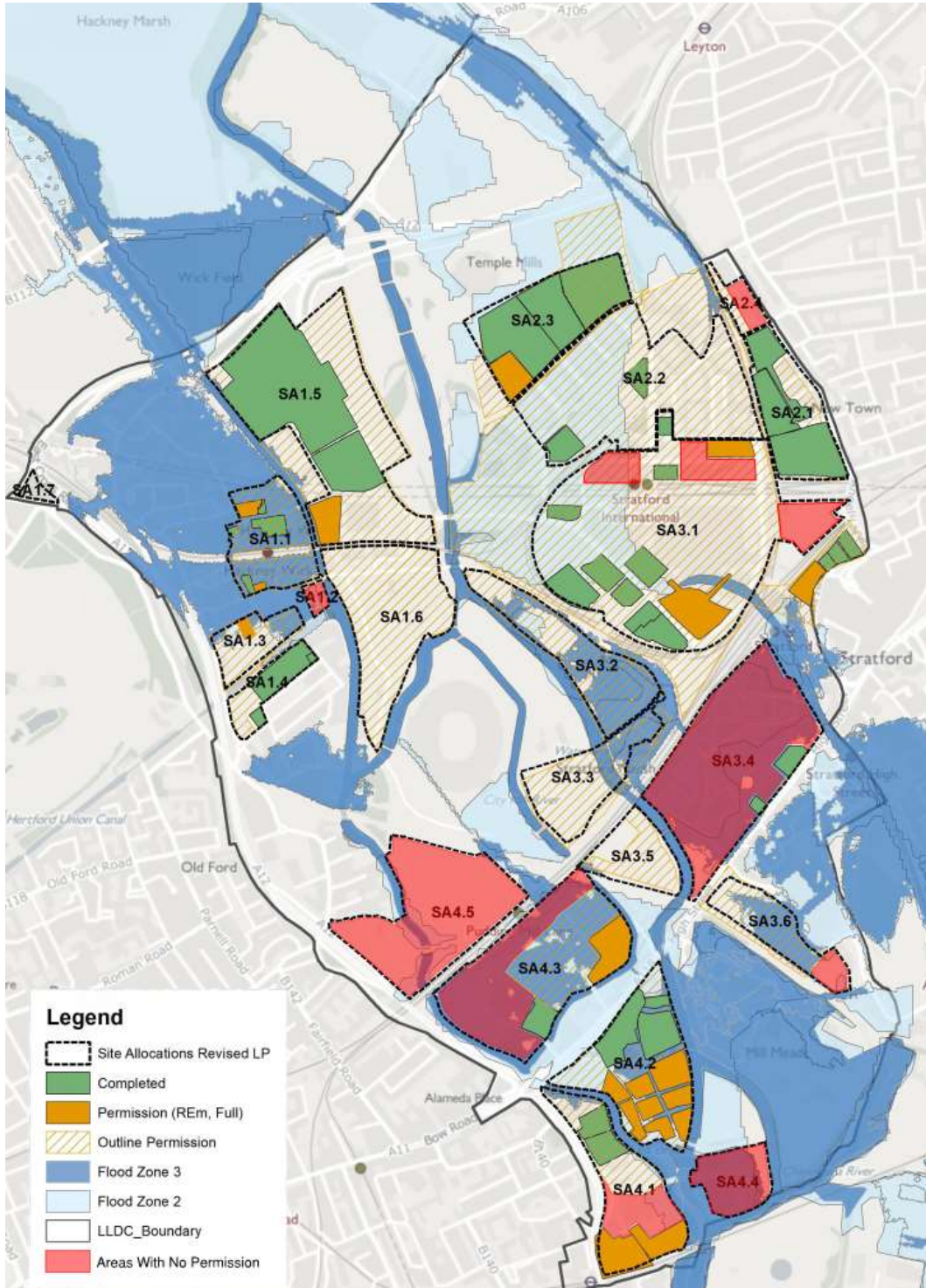


Figure 1 – LLDC Draft Revised Local Plan Site Allocations and Permission Status as at March 2019 and EA Flood Zones as shown on the Flood Maps for Planning

3 National Guidance

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF 2014) was updated on 19 February 2019 following its previous update in 2018. With regards to ‘Planning and Flood Risk’, there have been no changes since the July 2018 update.

The key changes since NPPF 2014 with regards to flood risk, as summarised in ‘*National Planning Policy Framework Consultation proposals*’³, are:

- Development plans should have regard to the cumulative impact of flood risk, rather than just to or from the individual development sites (Para. 155); and
- It must be demonstrated that the development incorporated sustainable drainage systems, unless there is clear evidence that this would be inappropriate. (Para. 163).

The sites assessed within this report will take into account these changes since NPPF 2014.

3.2 Climate Change Allowances

In May 2016, the EA issued a guidance note on Flood Risk Assessments: Climate Changes allowances⁴. This note provides guidance on the level of technical assessment that is required to incorporate climate change impacts. It should be noted that the assessment guide in the table below is only indicative, and that all applicants should consult the EA at the pre-planning stage to confirm the assessment approach.

The table defines two possible approaches:

1. **Intermediate:** Developer can use existing modelled flood and flow data to construct a stage-discharge rating curve, which can be used to interpolate a flood level based on the required peak flow allowance to apply to the ‘design flood’ flow.
2. **Detailed:** Perform detailed hydraulic modelling, through either re-running Environment Agency hydraulic models (if available) or construction of a new model by the developer.

The level of assessment required for a development can be seen in Table 1, where the development sizes are defined as:

³ National Planning Policy Framework, Consultation proposals, March 2018, Ministry of Housing, Communities and Local Government.

⁴ Flood risk assessment: climate change allowances, application of the allowances and local considerations, May 2016, Environment Agency.

- **Minor:** 1-9 dwellings/ less than 0.5 ha | Office / light industrial under 1ha | General industrial under 1 ha | Retail under 1 ha | Gypsy/traveller site between 0 and 9 pitches
- **Small-Major:** 10 to 30 dwellings | Office / light industrial 1ha to 5ha | General industrial 1ha to 5ha | Retail over 1ha to 5ha | Gypsy/traveller site over 10 to 30 pitches
- **Large-Major:** 30+ dwellings | Office / light industrial 5ha+ | General industrial 5ha+ | Retail 5ha+ | Gypsy/traveller site over 30+ pitches | any other development that creates a non-residential building or development over 1000 sq m

Table 1 – Flood Modelling Level Assessment

| VULNERABILITY CLASSIFICATION | FLOOD ZONE | DEVELOPMENT TYPE | | |
|------------------------------|------------|-----------------------------|--------------|--------------|
| | | MINOR | SMALL-MAJOR | LARGE-MAJOR |
| ESSENTIAL INFRASTRUCTURE | Zone 2 | Detailed | | |
| | Zone 3a | Detailed | | |
| | Zone 3b | Detailed | | |
| HIGHLY VULNERABLE | Zone 2 | Intermediate | Intermediate | Detailed |
| | Zone 3a | Not appropriate development | | |
| | Zone 3b | Not appropriate development | | |
| MORE VULNERABLE | Zone 2 | Intermediate | Intermediate | Intermediate |
| | Zone 3a | Intermediate | Detailed | Detailed |
| | Zone 3b | Not appropriate development | | |
| LESS VULNERABLE | Zone 2 | Intermediate | Intermediate | Intermediate |
| | Zone 3a | Intermediate | Intermediate | Detailed |
| | Zone 3b | Not appropriate development | | |
| WATER COMPATIBLE | Zone 2 | None | | |
| | Zone 3a | Intermediate | | |
| | Zone 3b | Detailed | | |

4 Flood Risk Mapping

The flood maps for planning produced by the EA do not take into account the latest climate change allowances- Therefore, more up to date modelling information, informed by flood modelling undertaken by the four London Boroughs: London Borough of Tower Hamlets (LBTH); London Borough of Newham (LBN); London Borough of Hackney (LBH), has been referenced. None of the remaining site allocations sit within London Borough of Waltham Forest and therefore this has not been considered in this assessment.

Updated flood risk mapping information has been provided by LBTH and LBN which both carried out their flood modelling, using updated climate change allowances, in 2017.

The 100 year + 70% climate change scenario (noted as 1% AEP event plus 70% Climate Change from here onwards) results from these mapping exercises will be used to inform this flood risk update. LBTH provided information in PDF format, whereas LBN provided their models and modelling outputs, and therefore these have been the principal source of information to this assessment. It is assumed that the modelling information provided by LBN is acceptable to the EA and suitable to use in assessing the LLDC area with respect to the impact of the new climate change allowances.

The flood outline only has been used to inform this assessment, whereas the flood depths will need to be considered on an individual development site basis as part of a Site-Specific Flood Risk Assessment (SSFRA).

It is recognised that the most recent SFRA (2010) produced by LBH does not use modelling information incorporating the latest climate change allowances. However, the Hackney Wick Central masterplan⁵ planning application included a masterplan level flood risk assessment using the most up to date modelling which covers the site allocations within the LLDC area.

The updated modelling data has been combined with open source data published by the EA regarding flood risk. This allows the difference in flood risk for each site to be identified. The datasets used to inform this assessment are as follows, and were downloaded on 13/06/2019:

- EA_FloodMapForPlanningRiversAndSeaFloodZone2_SHP
- EA_FloodMapForPlanningRiversAndSeaFloodZone3_SHP
- EA_HistoricFloodMap_SHP

For this assessment, the modelling results used for the flood outline are for the worst-case climate change scenario (70%), and therefore this may not necessarily be applicable to all types of development, such as shorter life span or low vulnerability developments. However, this type of development has not been considered within this assessment.

⁵ LPA case number 16/00166/OUT

5 Assessment of Sites

5.1 SA 1.2 Hamlet Industrial Estate

Hamlet Industrial Estate is a site allocation located within LBH and is proposed to be a mixed-use development which includes employment and residential floorspace complemented by restaurants and cafes. The site is bordered on the eastern and southern boundary by the River Lee Navigation and the Hertford Union Canal respectively.

The site allocation does not currently have any outline or full permissions and no development has been completed.

5.1.1 Flood Risk Mapping



Figure 2 – EA Flood Map for Planning for SA 1.2

As shown in Figure 2, the site largely lies within Flood Zone 2, with some areas lying within Flood Zone 1.

The updated flood modelling outline for the 1% Annual Exceedance Probability (AEP) event plus 70% Climate Change shows that the majority of the site will become flooded for this scenario. This can be seen in Figure 3.



Figure 3 – Updated flood outline from LBN updated mapping⁶ showing the 1% AEP flood extents plus 70% Climate Change for SA 1.2

5.1.2 Commentary on the Sequential and Exception Tests

The Sequential and Exception test for this site is updated with the assumption that the outline for the 1% AEP event plus 70% Climate Change will be categorised in the same manner as a Flood Zone 3a - Land having a 1% or greater annual probability of river flooding.

Given that the majority of the site now lies within the 1% AEP event plus 70% Climate Change, there are very limited possibilities to allocate developments with 'more vulnerable' land use categories to areas with a lower probability of flooding.

There may be small areas of the site allocation area which lie outside of the flood plain, for example in the north eastern corner adjacent to White Post Lane. However, this may be impractical from a master planning perspective.

⁶ Flood modelling information received from the London Borough of Newham. Modelling carried out in 2017 using the 1% AEP event + 70% Climate Change.

Tables 2 and 3 below summarise the development compatibility and flood modelling assessment level in line with NPPF 2019⁷ and May 2016 climate change guidance⁸.

Table 2: Development Compatibility and Flood Assessment for Hamlet Industrial Estate

| Proposed Land Use | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility | Flood Assessment Level ⁹ |
|-----------------------|---|------------------------------|---------------------------------|-------------------------------------|
| Residential | Flood Zone 3a | More Vulnerable | Exception Test Required | Detailed |
| Restaurants/ Cafes | | Less Vulnerable | Development is appropriate | Detailed |
| Offices | | Less Vulnerable | Development is appropriate | Detailed |
| Conclusion | Exception test is required for residential land uses. All allocations within the sub area will require a detailed level of assessment. | | | |

Table 3 – Commentary on the Exception Test for Hamlet Industrial Estate

| NPPF Requirement to satisfy the Exception Test | Response |
|---|---|
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site has been identified as available for development through the Local Plan call-for-sites consultation. It has the potential to contribute towards the achievement of the housing target for the LLDC area set in the new London Plan of 21,610 new homes. The site allocation requirement for business space provides the opportunity for development to be designed and constructed in a manner that is suitable for the levels of identified flood risk. ¹⁰ |
| A site-specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere and, where possible, will reduce flood risk overall. | SSFRA will be undertaken for individual developments within the Sub-Area. |

5.2 SA 2.4 Chobham Farm North

Chobham Farm North is located within LBN and is proposed to comprise mixed use development. A strip on the western part of the site allocation has already received outline planning permission.

The part of the site allocation being considered in this assessment is shown in red in Figure 4.

⁷ National Planning Policy Framework, Consultation proposals, March 2018, Ministry of Housing, Communities and Local Government.

⁸ Flood risk assessment: climate change allowances, application of the allowances and local considerations, May 2016, Environment Agency.

⁹ Developments have been assumed to be Large-Major

¹⁰ Appendix B, Sites Report, August 2014, LLDC

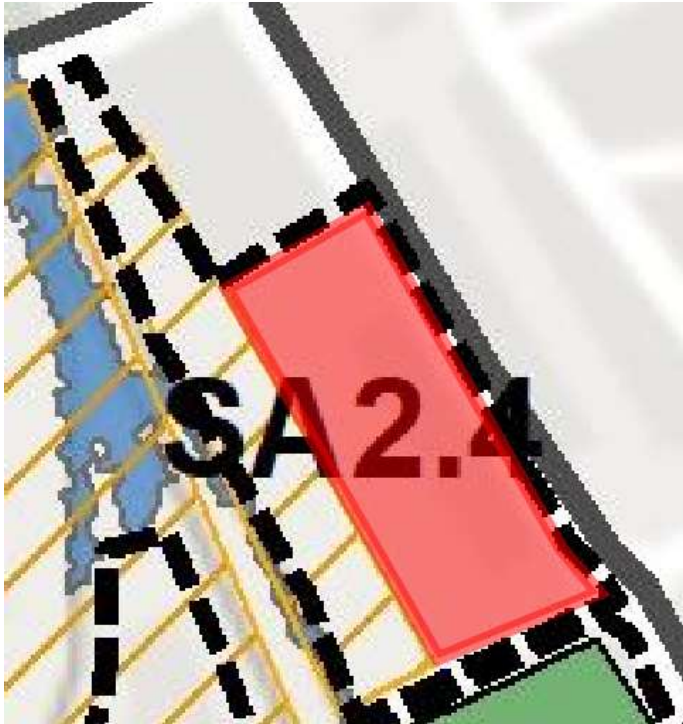


Figure 4 - Remaining parcel within SA 2.4

5.2.1 Flood Risk Mapping

As shown in Figure 5, the parcel being assessed within Chobham Farm North, lies within Flood Zone 1 according to the EA Maps for Planning. There is a small section in the north which lies within Flood Zone 3, however this is part of the development parcel which has already received outline planning approval.

The modelled scenario for this parcel of the site, in Figure 6, shows that there are additional areas of flooding within the site allocation. This flooding, however, does not extend to the part of the site being considered in the assessment. It can therefore be said that for this development parcel, the flood risk has not changed as a result of the updated climate change allowances.



Figure 5 - EA Flood Map for Planning for SA 2.4

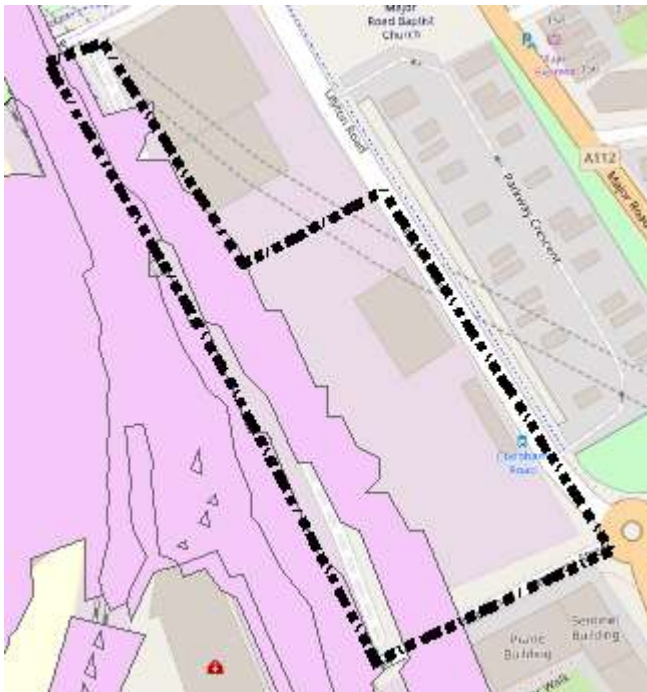


Figure 6 - Flood outline from LBN updated mapping showing the 1% AEP flood extents plus 70% Climate Change for SA 2.4

5.2.2 Commentary on the Sequential and Exception Tests

The Sequential and Exception Tests for this development parcel remain unchanged since the previous LBN SFRA (2017)¹¹. A Site-Specific Flood Risk Assessment is only required if individual development sites are greater than 1 Ha.

¹¹ London Borough of Newham Level 1 & 2 Strategic Flood Risk Assessment, 25 September 2017, Revision 4; AECOM

5.3 SA 3.1 Stratford Town Centre West

Stratford Town Centre West is located within LBN. Much of the site allocation has already received permission or has been completed. There are development parcels within this site allocation which do not benefit from planning permission. These are located in the northern and eastern part of the site allocation. The portions of the site being considered are shown in red within Figure 7, where the numbers refer to development parcel as defined in the Draft Revised Local Plan.

The eastern parcel (2) is proposed to provide large scale town centre use, parcel 1 will be mixed use and parcel 5 will provide mainly residential uses with supporting ground floor uses.

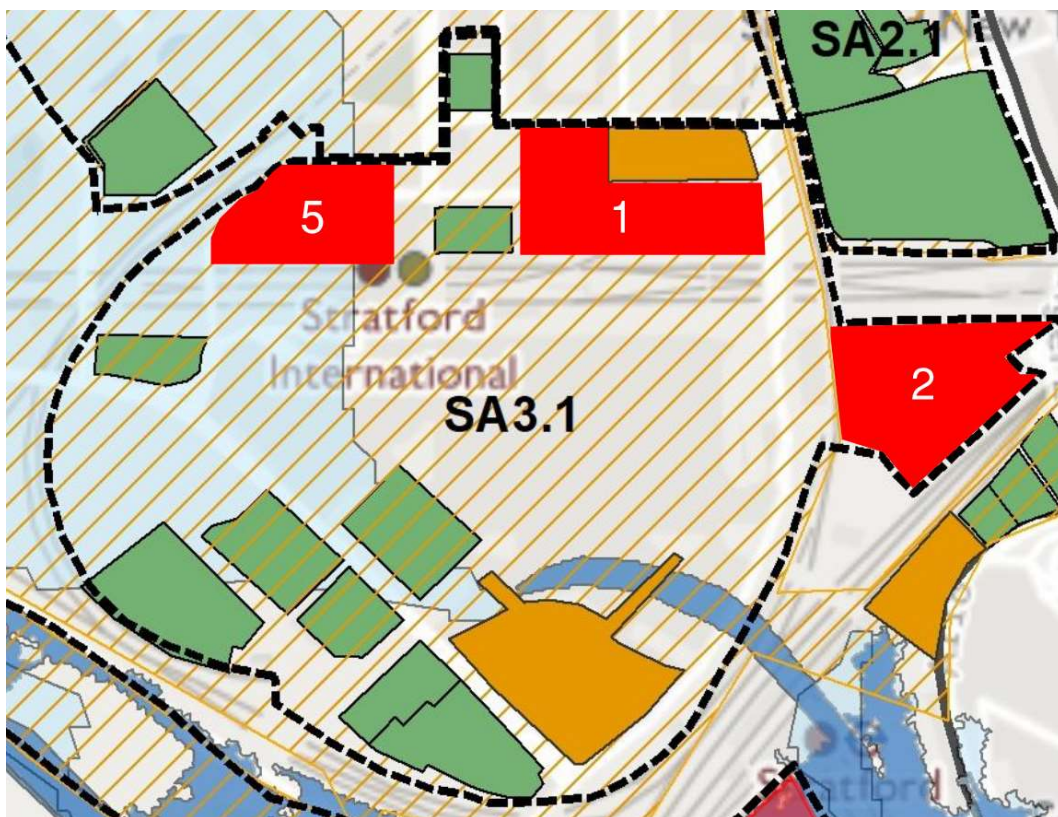


Figure 7 – Remaining parcels within SA 3.1

5.3.1 Flood Risk Mapping

As shown in Figure 8, parcels 1 and 2 lie completely within Flood Zone 1, and parcel 5 almost entirely lies within Flood Zone 2 according to the EA Flood Maps for Planning.

The modelled scenario shows that the flood risk for the parcels does not change with the additional 70% climate change, this is shown in Figure 9.

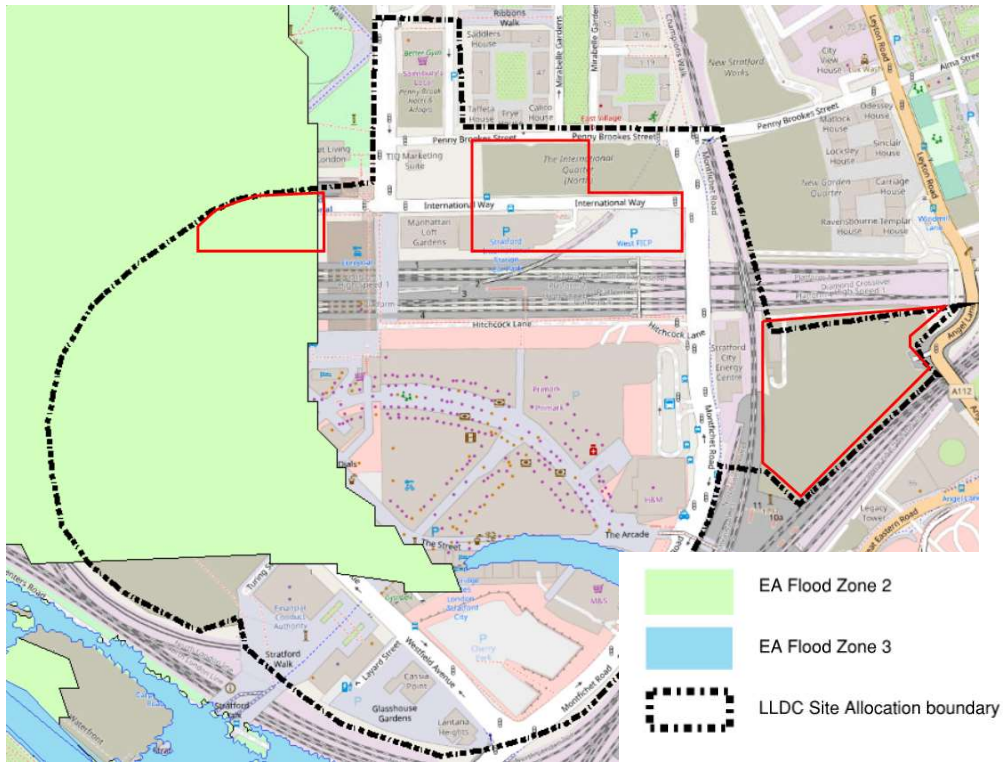


Figure 8 - EA Flood Map for Planning for SA 3.1

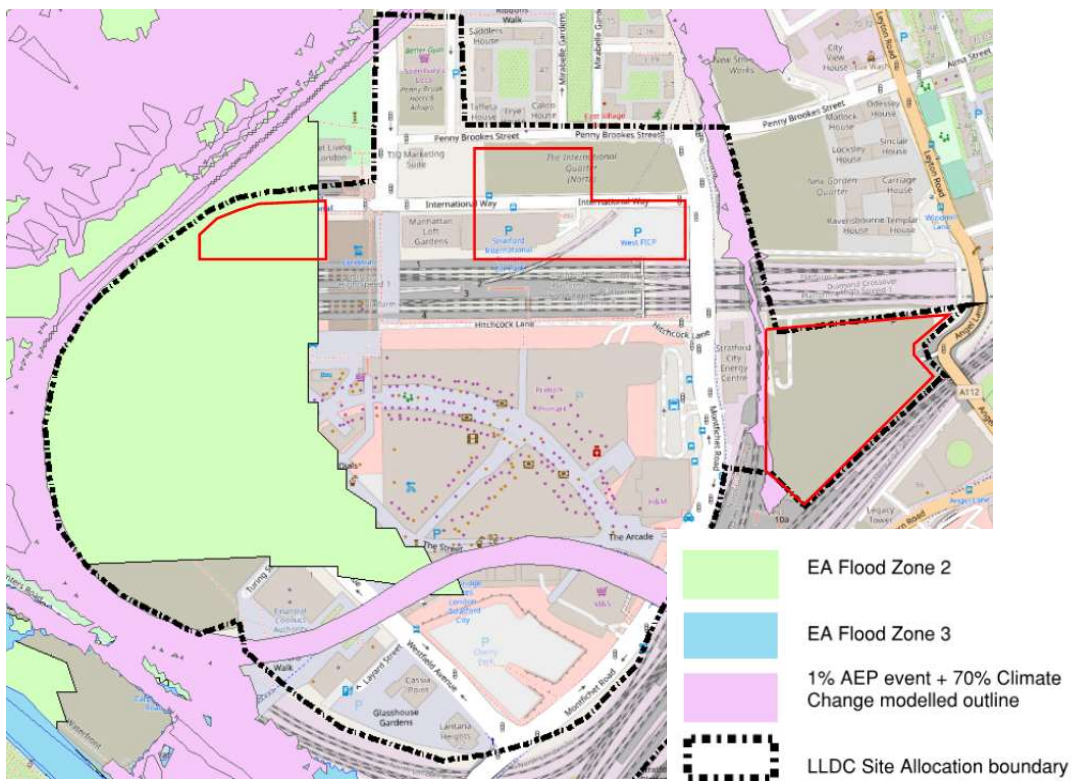


Figure 9 - EA Flood Maps for Planning and flood outline from LBN updated mapping showing the 1% AEP flood extents plus 70% Climate Change for SA 3.1

5.3.2 Commentary on the Sequential and Exception tests

The Sequential and Exception Tests for these parcels remain unchanged since the previous LBN SFRA (2017)¹².

A Site-Specific Flood Risk Assessment is only required if individual developments within Flood Zone 1 are greater than 1 Ha.

5.4 SA 3.4 Greater Carpenters District

Greater Carpenters District lies within LBN and has small areas along the southern boundary which have completed developments. The site is bounded to the south by the Waterworks River, and to the north by Stratford Rail/ Underground Station.

Figure 10 shows the part of the site which is being considered as part of this assessment in red.

The site is comprised of existing mixed-use development, and the adopted Local Plan proposes that the area is re-developed with the same land-use category.

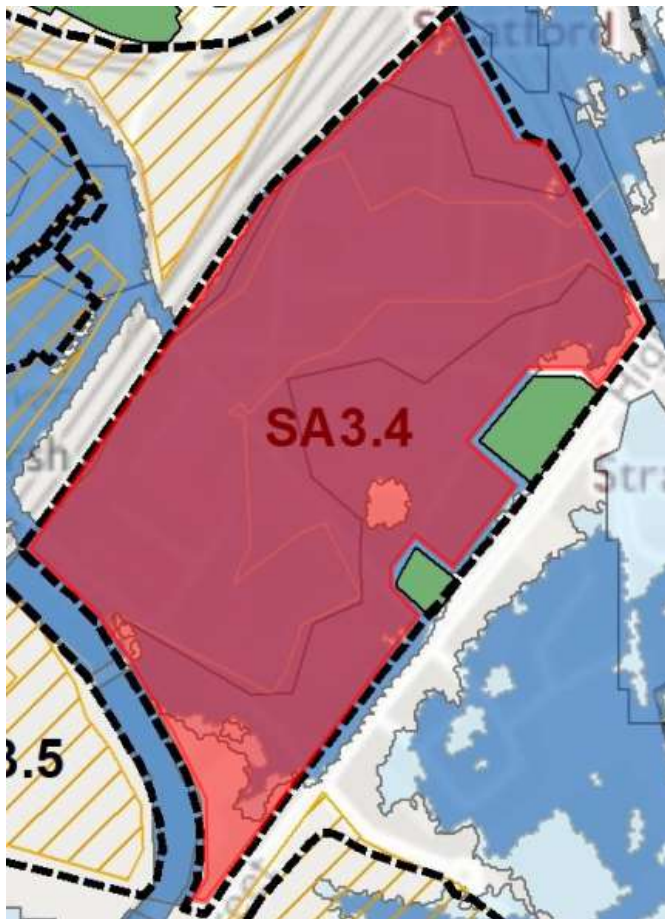


Figure 10 - Remaining parcel within SA 3.4

¹² London Borough of Newham Level 1 & 2 Strategic Flood Risk Assessment, 25 September 2017, Revision 4; AECOM

5.4.1 Flood Risk Mapping

The majority of the site lies within Flood Zone 3 according to the EA maps for Planning, as shown in Figure 11. Small areas of the north eastern part of the site lie within Flood Zone 1.

The updated 1% AEP event plus 70% Climate Change flood outline shows that the extents are less than that of the existing Flood Zone 3.

Therefore, according to the latest mapping information, which takes into account the latest figures for climate change, there are less parts of the site which would lie within the EA defined Flood Zone 3a, although for the majority of the site, the risk is unchanged.

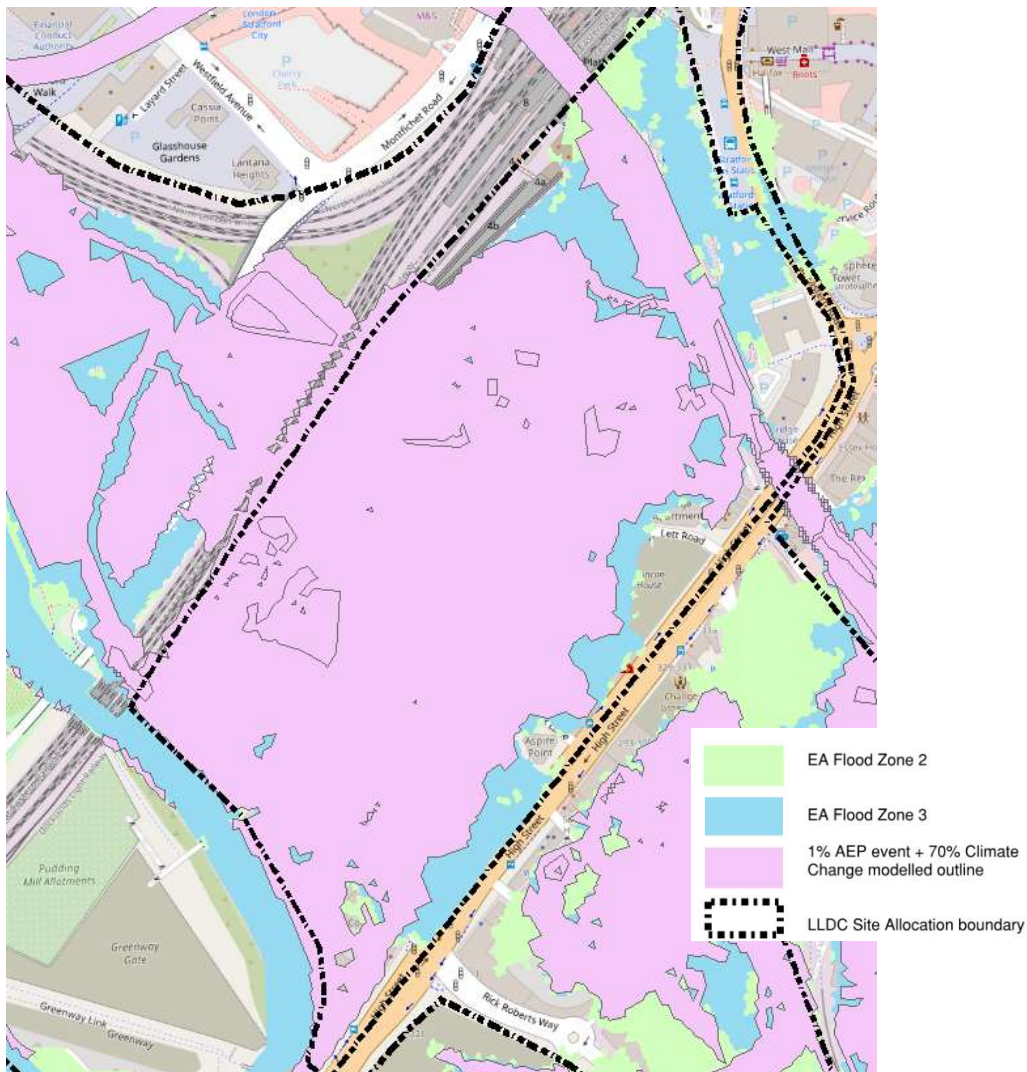


Figure 11 - EA Flood Maps for Planning and flood outline from LBN updated mapping¹³ showing the 1% AEP flood extents plus 70% Climate Change for SA 3.4

5.4.2 Commentary on the Sequential and Exception Tests

The Sequential and Exception Test for this site is updated with the assumption that the outline for the 1% AEP event plus 70% Climate Change flood will be categorised in the same manner as a Flood Zone 3a - Land having a 1 in 100 or greater annual probability of river flooding. Therefore, the areas of the site which are categorised as Flood Zone 3 but lie outside of the modelled 1% AEP event plus 70% Climate Change outline, will be downgraded as residual risk when the Sequential and Exception tests are carried out.

It is possible that more vulnerable developments can be directed towards areas that lie outside of the 1% AEP event plus 70% Climate Change flood outline. From the adopted Local Plan, it is shown that much of this area in the south western corner is designated for employment uses and public open space.

Tables 4 and 5 below summarise the development compatibility and flood modelling assessment level in line with NPPF and the May 2016 climate change guidance.

Table 4: Development Compatibility and Flood Assessment for Greater Carpenters District

| Proposed Land Use | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility | Flood Assessment Level ¹⁴ |
|--------------------|---|------------------------------|---------------------------------|--------------------------------------|
| Residential | 2 | More Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Exception Test Required | Detailed |
| Restaurants/ Cafes | 2 | Less Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Development is appropriate | Intermediate |
| Offices | 2 | Less Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Development is appropriate | Detailed |
| Public Open Space | Flood Zone 2/3 | Water Compatible Development | Development is appropriate | None/ Intermediate |
| Conclusion | Exception test and detailed modelling required for residential land uses within the 1% AEP event plus 70% Climate Change storm outline. | | | |

¹³ Flood modelling information received from the London Borough of Newham. Modelling carried out in 2017 in line with updated climate change allowances.

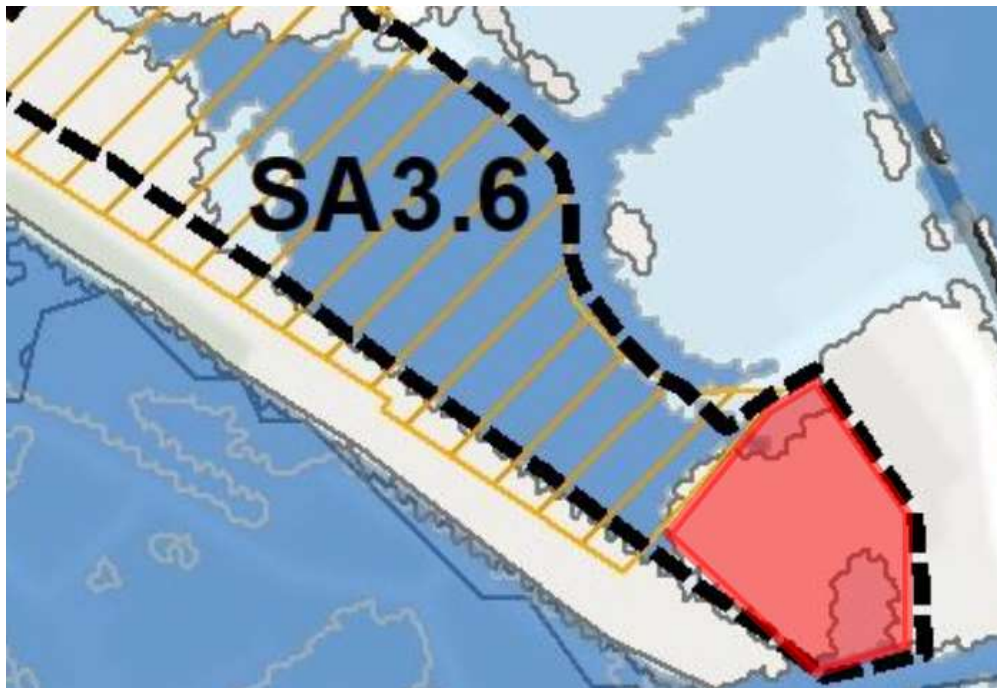
¹⁴ Residential and Office Developments have been assumed to be Large-Major, Cafes/ Restaurants assumed to be Minor

Table 5 – Commentary on the Exception Test for Greater Carpenters District

| NPPF Requirement to satisfy the Exception Test | Response |
|---|---|
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to retain, increase or re-provide a significant number of new homes and new employment uses within this location in accordance with the Strategic Site Allocation within the LLDC Local Plan (2015) and revised in Draft in 2017. The site capacity is also required to ensure that the LLDC area as a whole can meet its ten year housing target set in the new London Plan of 21,610. ¹⁵ |
| A site-specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere and, where possible, will reduce flood risk overall. | SSFRA will be undertaken for individual developments within the site allocation |

5.5 SA 3.6 Rick Robert’s Way

Rick Robert’s Way lies within LBN, the majority of the Site-Allocation has received Outline Permission, with only the southern tip remaining. The portion of the site being considered in this assessment is shown in red in Figure 12. The site is proposed to be mixed use with residential and education uses.



¹⁵ Appendix B, Sites Report, August 2014, LLDC

Figure 12 – Remaining parcel within SA 3.6

5.5.1 Flood Risk Mapping

As shown in Figure 13, small areas of the site lie within flood zone 2 on the EA maps for planning.

The updated flood modelling outline for the 1% AEP event plus 70% Climate Change matches that of the EA Flood Zone 3, all of which is outside of the zone of consideration.



Figure 13 - EA Flood Maps for Planning and flood outline from LBN updated mapping¹⁶ showing the 1% AEP flood extents plus 70% Climate Change for SA 3.6

5.5.2 Commentary on the Sequential and Exception Tests

The Sequential and Exception Tests for this development parcel remain unchanged since the previous LBN SFRA (2017)¹⁷. A Site-Specific Flood Risk Assessment is only required if individual development sites are greater than 1 Ha.

5.6 SA 4.1 Bromley-By-Bow

Bromley-By-Bow is located within LBTH, and the majority of the site either has permission or is completed. The area of SA 4.1 being considered in this

¹⁶ Flood modelling information received from the London Borough of Newham. Modelling carried out in 2017 in line with updated climate change allowances.

¹⁷ London Borough of Newham Level 1 & 2 Strategic Flood Risk Assessment, 25 September 2017, Revision 4; AECOM

assessment can be seen in red in Figure 14. The River Lee forms the eastern boundary of the site.

The site is proposed to be mixed use, where the area under consideration partially forms the proposed 'district centre'.

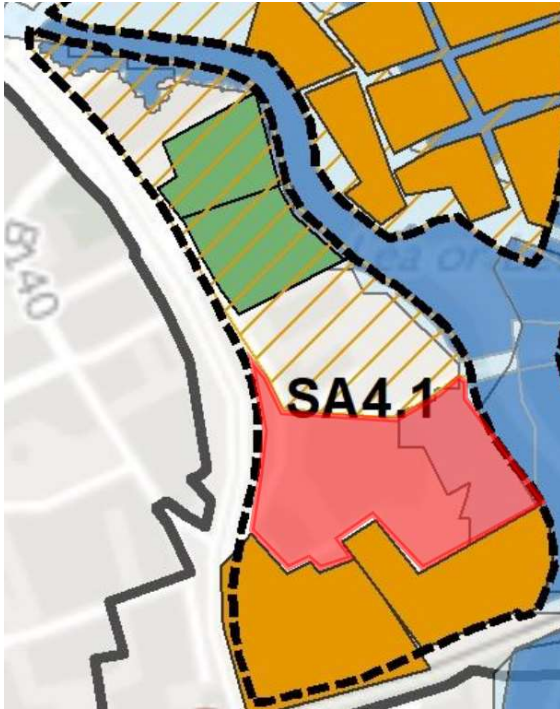


Figure 14 - Remaining parcel within SA 4.1

5.6.1 Flood Risk Mapping

As shown in Figure 15, the eastern part of the remaining parcel within the site lies within Flood Zone 2 according to the EA maps for planning.

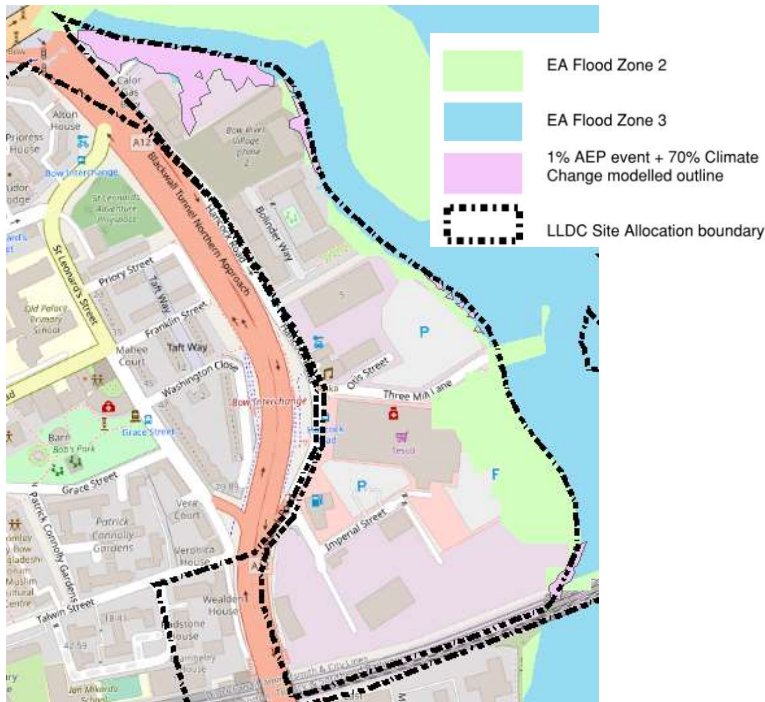


Figure 15 - EA Flood Maps for Planning and flood outline from LBN updated mapping showing the 1% AEP flood extents plus 70% Climate Change for SA 4.1

The updated flood model for the 1% AEP event plus 70% Climate Change storm, as seen in Figure 15, shows that the outline it extends to the northern part of the site, slightly further than the EA Flood Zone 3 for planning. There are also areas adjacent to the River Lee, along the eastern boundary where the 1% AEP event plus 70% Climate Change storm extends past Flood Zone 3, however the majority of these are within areas which already have permission or have been completed.

5.6.2 Commentary on the Sequential and Exception Tests

The Sequential and Exception tests for this development parcel remain unchanged since the previous LBTH SFRA (2017)¹⁸. A site-specific flood risk assessment is only required for developments within the remaining parcel of the site allocation if they are greater than 1 Ha or have areas which lie within Flood Zone 2.

5.7 SA 4.3 Pudding Mill

Pudding Mill is located within LBN and is bounded entirely on its southern edge by the Bow Back River, on its eastern edge by the City Mill River and its western edge by the River Lee. The eastern and southern area of the site has area which have either received permission or are completed. The area being considered in this assessment is shown in Figure 16 in red.

¹⁸ London Borough of Tower Hamlets Strategic Flood Risk Assessment, 15 August 2017, Revision 6; AECOM

Pudding Mill is proposed to be a medium density, mixed-use area including residential, public open space, and a new local centre.

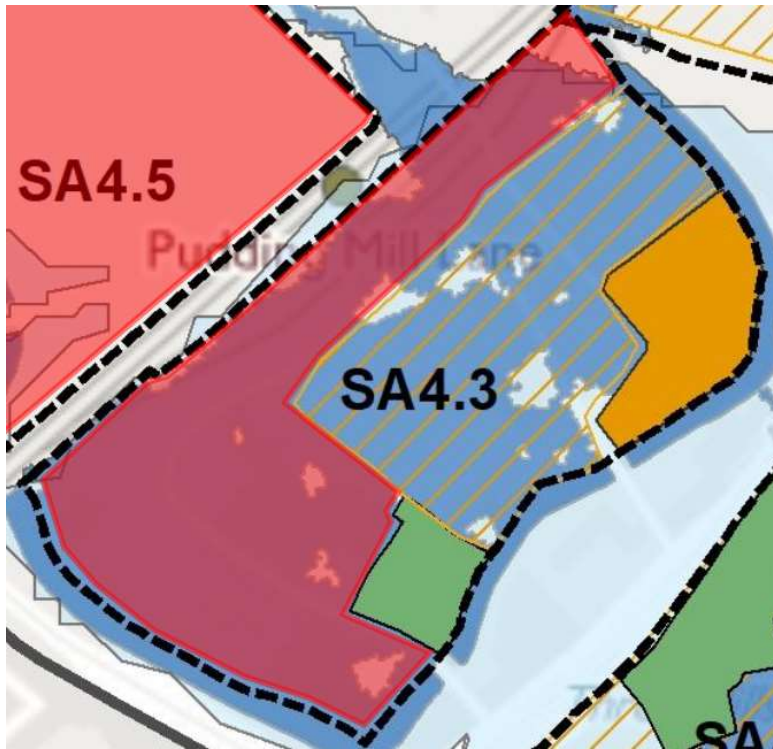


Figure 16 - Remaining parcel within SA 4.3

5.7.1 Flood Risk Mapping

The EA Flood Maps for Planning show that the majority of the site lies within Flood Zone 3, with some small areas being within Flood Zone 2. This can be seen in Figure 17.

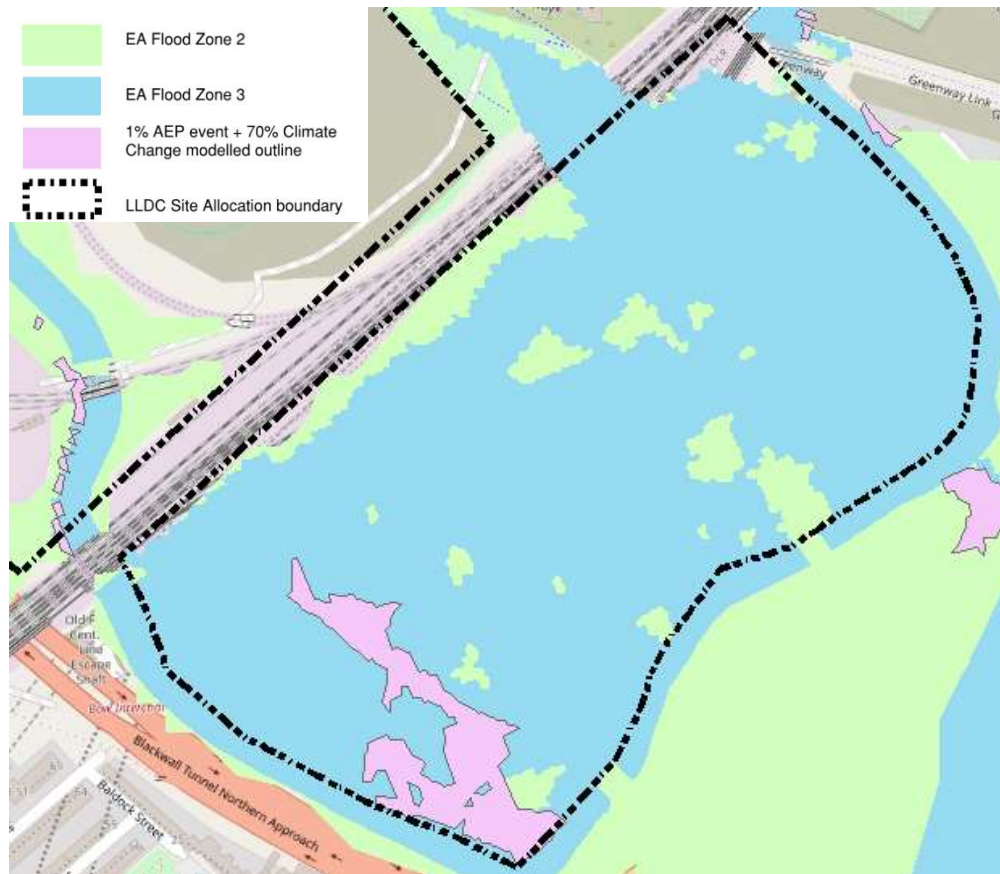


Figure 17 – EA Flood Maps for Planning and flood outline from LBN updated mapping showing the 1% AEP flood extents plus 70% Climate Change for SA 4.3

It can be seen in Figure 17 that the 1% AEP event plus 70% Climate Change storm flood extents are much less extensive within the Pudding Mill site allocation than the Flood Zone 3 extents. There is only a small area in the south west which is affected.

5.7.2 Commentary on the Sequential and Exception Tests

The Sequential and Exception test for this site is updated with the assumption that the outline for the 1% AEP event plus 70% Climate Change flood will be categorised in the same manner as a Flood Zone 3a - Land having a 1 in 100 or greater annual probability of river flooding, and that the areas of the site which are categorised as Flood Zone 3 but lie outside of the modelled 1% AEP event plus 70% Climate Change outline, will be downgraded as residual risk.

It is possible that more vulnerable developments can be directed towards areas that lie outside of the 1% AEP event plus 70% Climate Change flood outline. From the adopted Local Plan, it is shown that much of this area in the south

western corner is designated for employment uses and other areas are designated for public open space.

Table 6 - Development Compatibility and Flood Assessment for Pudding Mill

| Proposed Land Use | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility | Flood Assessment Level ¹⁹ |
|-----------------------|---|------------------------------|---------------------------------|--------------------------------------|
| Residential | 2 | More Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Exception Test Required | Detailed |
| Restaurants/ Cafes | 2 | Less Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Development is appropriate | Intermediate |
| Offices | 2 | Less Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Development is appropriate | Detailed |
| Public Open Space | Flood Zone 2/3 | Water Compatible Development | Development is appropriate | None/ Intermediate |
| Conclusion | Exception test and detailed modelling required for residential land uses within the 1% AEP event plus 70% Climate Change storm outline. | | | |

Table 7 – Commentary on the Exception Test for Pudding Mill

| NPPF Requirement to satisfy the Exception Test | Response |
|---|--|
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to provide a significant number of new homes and new employment uses on brownfield land that has previously been earmarked for redevelopment and regeneration in earlier adopted plans and in the Site Allocation within the LLDC Local Plan (2015) and revised in Draft in 2017 The site capacity is also required to ensure that the LLDC area as a whole can meet its ten year housing target set in the new London Plan of 21,610. ²⁰ |
| A site-specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere and, where possible, will reduce flood risk overall. | SSFRA will be undertaken for individual developments within the site allocation. |

¹⁹ Residential and Office Developments have been assumed to be Large-Major, Cafes/ Restaurants assumed to be Minor

²⁰ Appendix B, Sites Report, August 2014, LLDC

5.8 SA 4.4 Three Mill Lane

Three Mill Lane lies within LBN and is bounded to the south by the Channelsea River and to the east by the Prescott Channel. This site was not included in the adopted Local Plan but has been added to the Draft Revised Local Plan. The site is proposed to focus on restoration and conservation of existing heritage buildings on the site, with the development being mixed use.

5.8.1 Flood Risk Mapping

As shown in Figure 18, the site largely lies within Flood Zone 3 according to the EA Flood Maps for Planning.

The updated flood model outline for the 1% AEP event plus 70% Climate Change event, shows that the flood extents are less than that of the EA Flood Zone 3 for Planning.

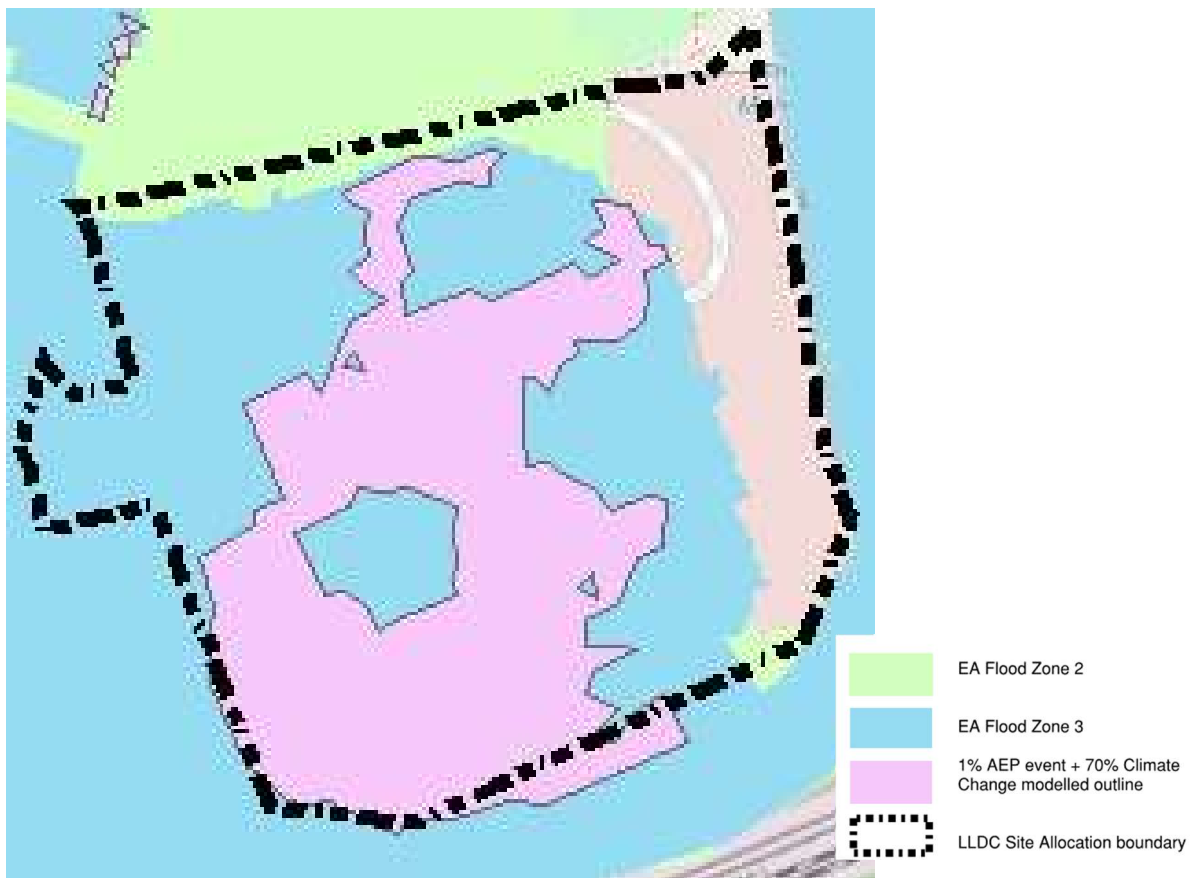


Figure 18 - EA Flood Maps for Planning and flood outline from LBN updated mapping showing the 1% AEP flood extents plus 70% Climate Change for SA 4.4

5.8.2 Commentary on the Sequential and Exception tests

The Sequential and Exception Test for this site is updated with the assumption that the outline for the 1% AEP event plus 70% Climate Change flood will be categorised in the same manner as a Flood Zone 3a - Land having a 1 in 100 or greater annual probability of river flooding, and that the areas of the site which are

categorised as Flood Zone 3 but lie outside of the modelled 1% AEP event plus 70% Climate Change outline, will be downgraded to be a residual risk of flooding in the 1% AEP flood event scenario.

It is possible that more vulnerable developments can be directed towards areas that lie outside of the 1% AEP event plus 70% Climate Change flood outline. It is not currently known what type of development land use is proposed for this new site allocation, however an example of land compatibility assessment for likely development types has been carried out in Table 8.

Table 8: Example Development Compatibility and Flood Assessment for Three Mill Lane

| Proposed Land Use | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility | Flood Assessment Level ²¹ |
|--------------------|---|------------------------------|---------------------------------|--------------------------------------|
| Residential | 2 | More Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Exception Test Required | Detailed |
| Restaurants/ Cafes | 2 | Less Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Development is appropriate | Intermediate |
| Offices | 2 | Less Vulnerable | Development is appropriate | Intermediate |
| | 3 | | Development is appropriate | Detailed |
| Public Open Space | Flood Zone 2/3 | Water Compatible Development | Development is appropriate | None/ Intermediate |
| Conclusion | Exception test and detailed modelling required for residential land uses within the 1% AEP event plus 70% Climate Change storm outline. | | | |

The Exception Test shall be assessed as part of a Site-Specific Flood Risk Assessment when the development proposals are defined.

5.9 SA 4.5 Bow Goods Yards (Bow East and West)

This site allocation has the River Lea running through the centre and is bounded to the south by railway lines. This site was not included in the adopted Local Plan but has been added to the 2019 Plan. It is an area of Strategic Industrial Land, and this use is proposed to be consolidated and intensified with rail, industrial and other appropriate uses.

5.9.1 Flood Risk Mapping

As shown in Figure 19, parts of the site adjacent to the River Lea are within Flood Zone 2. The 1% AEP event plus 70% Climate Change outline shows that there are very minor parts of the site adjacent to the River Lea that flood.

²¹ Residential and Office Developments have been assumed to be Large-Major, Cafes/ Restaurants assumed to be Minor

However, given that these areas are so small and that they are adjacent to the River Lea, it is not considered that the flood risk to the site has changed as a result of the updated hydraulic modelling.



Figure 19 - EA Flood Maps for Planning and flood outline from LBN updated mapping showing the 1% AEP flood extents plus 70% Climate Change for SA 4.5

5.9.2 Commentary of the Sequential and Exception Tests

The Sequential and Exception Tests for this development parcel remain unchanged since the previous LBN SFRA (2017)²² and LBTH SFRA (2017)²³ (as the site lies partially within both boroughs).

A Site-Specific Flood Risk Assessment is only required if individual development sites are greater than 1 Ha or lie within the areas of Flood Zone 2/3.

²² London Borough of Newham Level 1 & 2 Strategic Flood Risk Assessment, 25 September 2017, Revision 4; AECOM

²³ London Borough of Tower Hamlets Strategic Flood Risk Assessment, 15 August 2017, Revision 6; AECOM

Appendix A– Environment Agency Meeting Notes

Arup flood risk phonecall – LLDC local plan 2018

14/03/2019

Attendees

Lisa Mills (SP)

Sacha Barnes (PSO)

Simon Delves (ARUP)

Notes

- ARUP work carried out late 2018, created an addendum to flood risk report to support 2018 Local Plan. EA raised concern about the mapping, EA met with LLDC in January about concerns over no SRFA or an assessment of climate change. ARUP re reviewed the addendum, noticed they had taken mapping form LLDC that was out of date. ARUP now gone back through other LPA's SFRA within the LLDC boundary, where some SFRA's updated, some not full, but have produced new modelling.
- EA have reviewed these maps from Newham , Tower Hamlets and Hackney, in agreement that we have no problems for ARUP using these maps to inform the flood risk addendum in support of 2018 local plan, because they use 70% allowance plus climate change. EA confirmed that the main concern was climate change has not been considered, don't mind where the information comes from, as long as the information is there for an assessment be done.
- Discussed ARUP originally did not properly applied the sequential test, but have advised the sequential and exception tests applied going forward. ARUP agreed there is a need to sit down with LLDC to see they have done the sequential test within their boundary, appreciating that their boundary is limited, to create robust evidence to show that the sequential test has been applied for the planning inspectorate at examination.
- EA agreed that where sites have been allocated, they should be revisited to see if they are still appropriate wherever possible. ARUP mentioned that generally, land uses already allocated are either commercial, or if residential, commercial at the lower levels to consider access / egress.
- Recognised that we're are at the point where a number of sites have got permission and are being granted, but these have had a site specific FRAs where required. Realistically only sites that have not been considered or new sites coming forward should be considered under Arup's updated flood risk review to inform the LLDC Local Plan update. EA agreed that this was ok.
- Discussed that the collecting of data from the LPA's SFRA's is the responsibility of the LLDC (EA doesn't own the models with the CC).
- Discussed that whilst the LLDC have produced an explanatory note for the inspectorate to mention that ARUP / EA are in discussions about flood risk, there is the possibility for ARUP to submit revised flood risk report addendum for EA to review in support of LLDC 2018 local plan before inspectorates

examination of flood risk policy (dependent on planning inspectorate timescales).

- ARUP to submit revised flood risk addendum report based on the above as soon as possible.

Appendix B – Sites Report, LLDC, August 2014

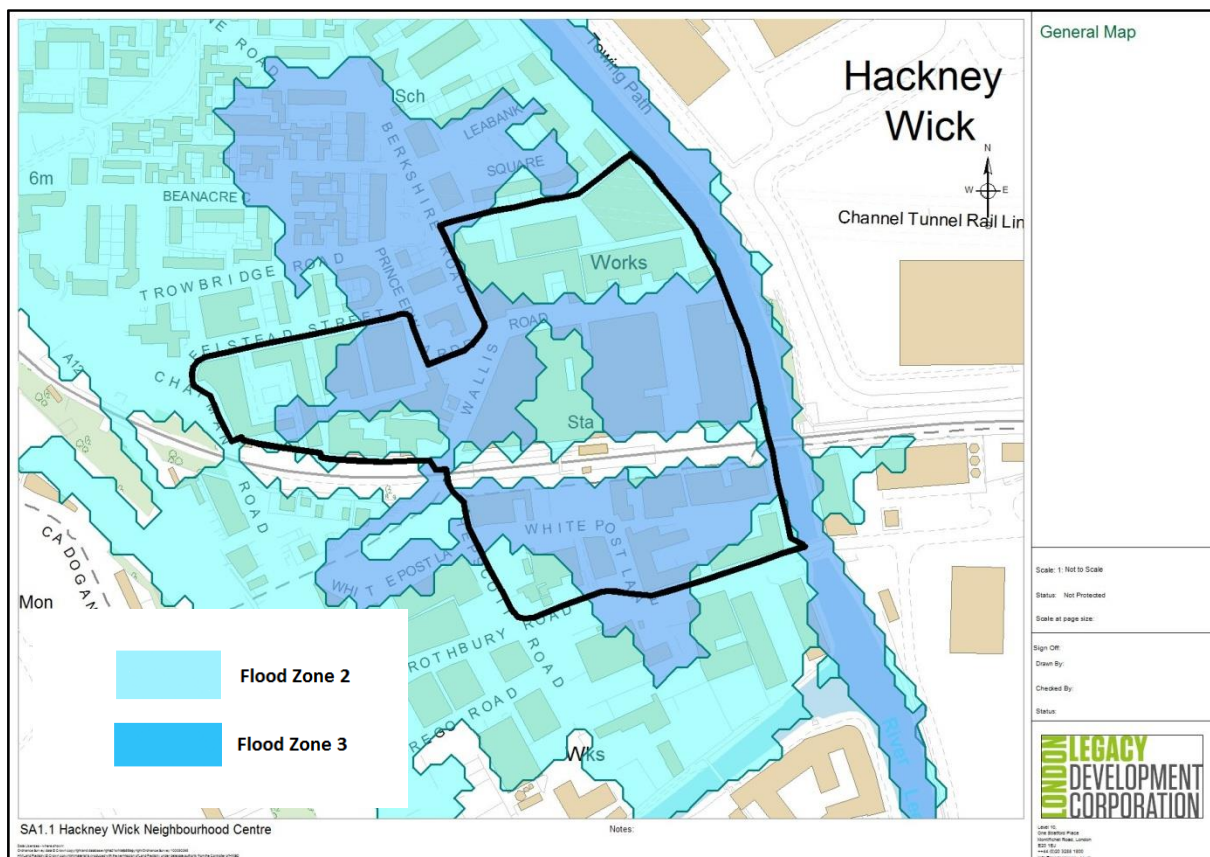
Appendix B: Flood Risk Sequential and Exceptions Tests as undertaken for the original Local Plan, as adopted in July 2015

The following sequential and exceptions tests were undertaken when producing the original Legacy Corporation Local Plan, which was adopted in July 2015. These were prepared in accordance with the applicable guidance at the time. The main report updates this information where an update has been considered necessary.

Hackney Wick Neighbourhood Centre

| | | | |
|--|--|-------------------------------------|---|
| Site Allocation Reference | SA1.1 Hackney Wick Neighbourhood Centre | | |
| Site Allocation Name And Location | Hackney Wick Neighbourhood Centre. Area to the east and west of the Lee Navigation around Hackney Wick Station. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zones 1-3 (areas to west of Lee Navigation and to the west where south of the railway line within Flood Zones 2 and 3) | More Vulnerable | Sequential Test Required |
| Community Uses | | More Vulnerable | Sequential Test Required |
| Retail & Leisure | | Less Vulnerable | Appropriate subject to Sequential Test. |
| Employment/Business Space | | Less Vulnerable | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|--|---|--|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is capable of delivering more than 500 new homes and is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Community Uses | Are there alternative sites available in Zone 1, 2 or 3? | No. The community uses would be required to serve the needs of the surrounding communities within a location accessible all and close to transport services and other amenities. |
| Retail and Leisure uses | Are there alternative sites available in Zone 1, 2 or 3? | No. There is a need to build on the provision of retail and leisure use that exists within the east and western extents of the Neighbourhood Centre, with other locations not providing this opportunity in terms of location or site availability. |
| Conclusion: | Much of the site allocation falls within Food Zone 2 and 3. Therefore an Exceptions Test is required. | |

| Exceptions Test | |
|---|---|
| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to provide a significant number of new homes and new employment uses on brownfield land that has previously been earmarked for redevelopment and regeneration in earlier adopted plans. The site capacity is also required to meet the London Plan housing target for the LLDC area and the housing target to 2031 within the Publication Local Plan of 14,711 new homes. |

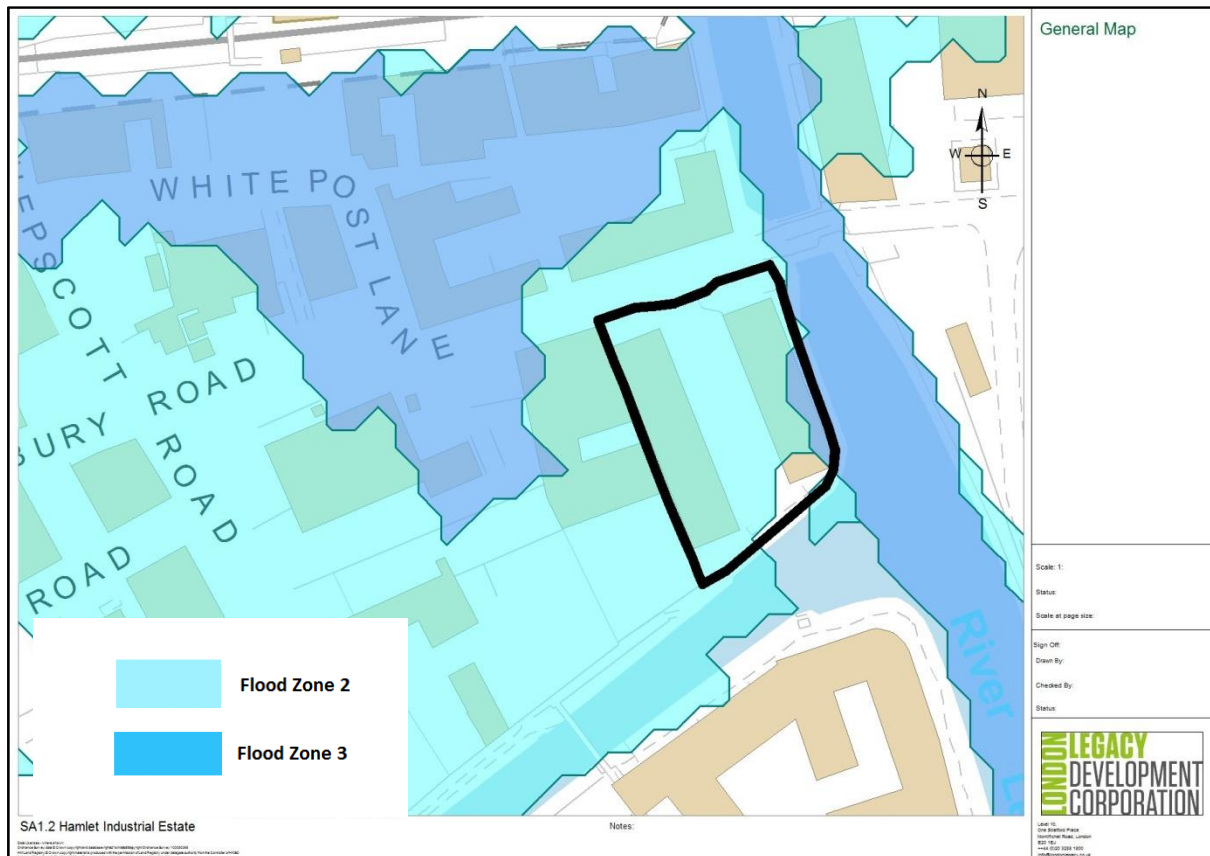
| | |
|---|---|
| | <p>Community uses are required in order to ensure that the neighbourhood centre functions in a way that properly serves the surrounding communities.</p> <p>The retail and leisure uses are also required to enable the location to function as a successful and coherent centre that is well located in terms of its accessibility.</p> |
| <p>A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.</p> | <p>The LB Tower Hamlets and LB Hackney SFRA 2 documents suggest that, the development is unlikely to increase flood risk elsewhere. A site specific Flood Risk Assessment would be required to address this part of the Exceptions Test, and take into account any site recommendations from the level 2 SFRA. These include:</p> <ul style="list-style-type: none"> • Development within areas shown to be at ‘actual’ risk of flooding may require compensatory storage to demonstrate there will be no loss of floodplain storage (Note that it might not be possible to increase building footprint size in some areas due to lack of land for flood storage compensation within the overall development area). • Development layout must consider surface water flow routes and manage runoff on site sustainably with a target to achieve Greenfield runoff rates. • Include ‘at source’ SUDS control measures to reduce existing site runoff in accordance with London Plan and local policy. • Open up river corridors and provide more floodplain storage. • Incorporation of flood resistance / resilience measures up to the flood level. • Application of the sequential approach at site level to be carried out to ensure ‘more vulnerable’ land uses are located within Flood Zones 1 and 2. • All residential accommodation to be located on first flood or above. |

| | |
|-------------------|---|
| | <ul style="list-style-type: none"> • Consideration of safe access / egress from the site and safe refuge. • Implementation of a flood emergency plan. • Design of development to consider mitigating the risk of groundwater flooding with use of impermeable materials. • The detailed guidance within the LB Hackney SFRA for Hackney Wick should also be taken into account. |
| <p>Conclusion</p> | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> |

Hamlet Industrial Estate

| | | | |
|--|--|-------------------------------------|--|
| Site Allocation Reference | SA1.2 Hamlet Industrial Estate | | |
| Site Allocation Name And Location | Hamlet Industrial Estate. Site with White Post Lane to the north, Lee Navigation to the east, Hertford Union Canal to the south. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zones 2 and 3 (Flood Zone 3 only along far eastern edge of site)) | More Vulnerable | Sequential Test Required |
| Business /employment Space | | Less Vulnerable | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--------------------------|------------|
| Uses within the site allocation | Stage in Sequential Test | Assessment |

| | | |
|-------------|--|--|
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This site is required in order to ensure delivery of the wider housing target and ensure that Fish Island contributes the identified level of potential housing towards this, while also continuing to provide employment and business space.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Conclusion: | The majority of the site falls within flood zones 2. Given that the site allocation includes residential use an Exceptions Test is required. | |

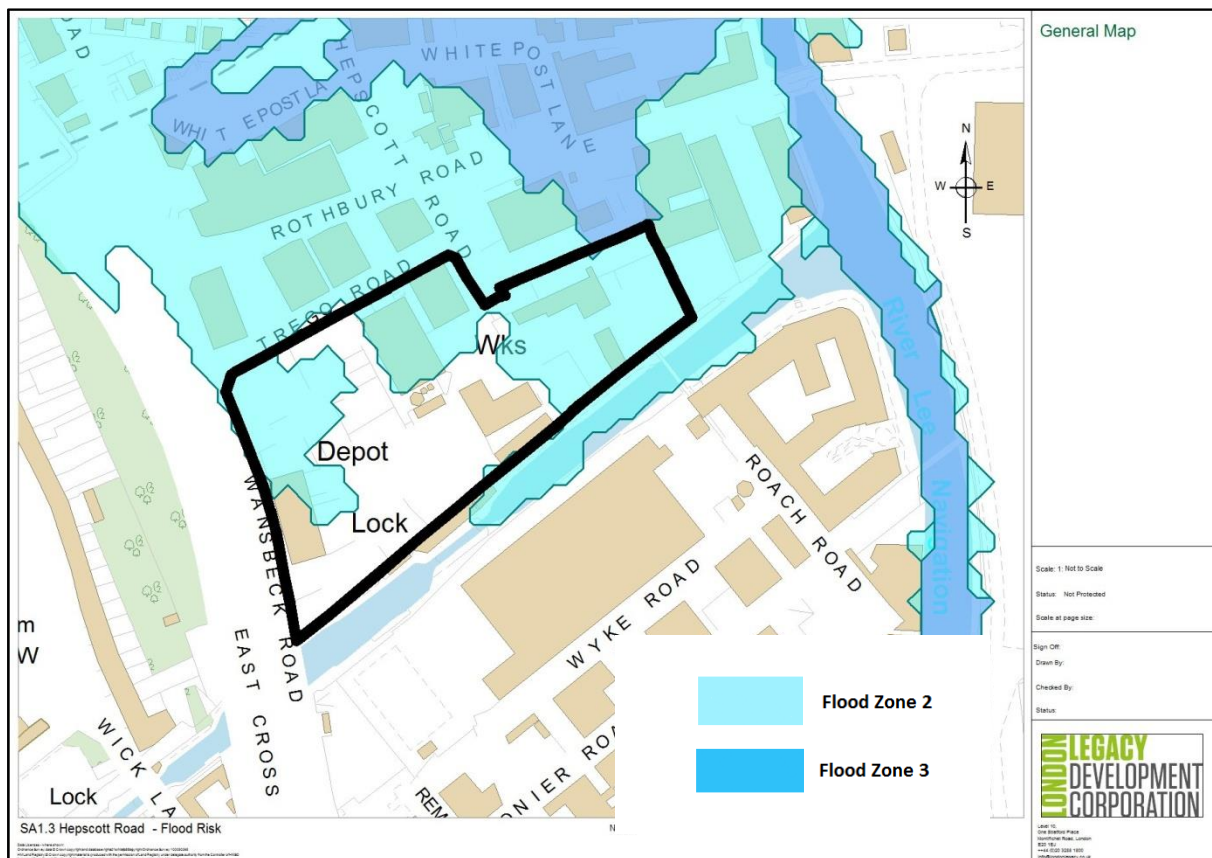
| Exceptions Test | |
|--|---|
| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | <p>The site has been identified as available for development through the Local Plan call-for-sites consultation. It has the potential to contribute towards the achievement of the housing target for the LLDC area set in the London Plan of 14,711 new home</p> <p>The site allocation requirement for business space provides the opportunity for development to be designed and constructed in a manner that is suitable for the levels of identified flood risk.</p> |
| A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. | The LB Tower Hamlets SFRA 2 considers that the proposed development in the area of this site is unlikely to increase flood risk elsewhere. A site specific Flood Risk Assessment would be required to address this part of the Exceptions Test, and take into account any recommendations from the level 2 SFRA. These would be likely to include: |

| | |
|------------|--|
| | <ul style="list-style-type: none"> • Development layout must consider surface water flow routes and manage runoff on site sustainably with a target to achieve Greenfield runoff rates. • Include 'at source' SUDS control measures to reduce existing site runoff in accordance with London Plan and local policy. • Open up river corridors and provide more floodplain storage. • Incorporation of flood resistance / resilience measures up to the flood level. • All residential accommodation to be located on first flood or above. • Consideration of safe access / egress from the site and safe refuge. • Implementation of a flood emergency plan. |
| Conclusion | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> |

Hepscott Road

| | | | |
|--|--|--|--|
| Site Allocation Reference | SA1.3 Hepscott Road | | |
| Site Allocation Name And Location | Hepscott Road. Site to with Trego Road and Hepscott Road to the north, Hertford Union Canal to the south and Wansbeck Road to the west | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zones 1 and 2 | More Vulnerable | Sequential Test Required |
| Community use | | More vulnerable | Sequential Test Required |
| Business /employment Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Waste Management Facility | | Water Compatible | Appropriate |
| Conclusion | | Requires Sequential Test for residential and community uses. | |

Site Allocation Flood Risk Map

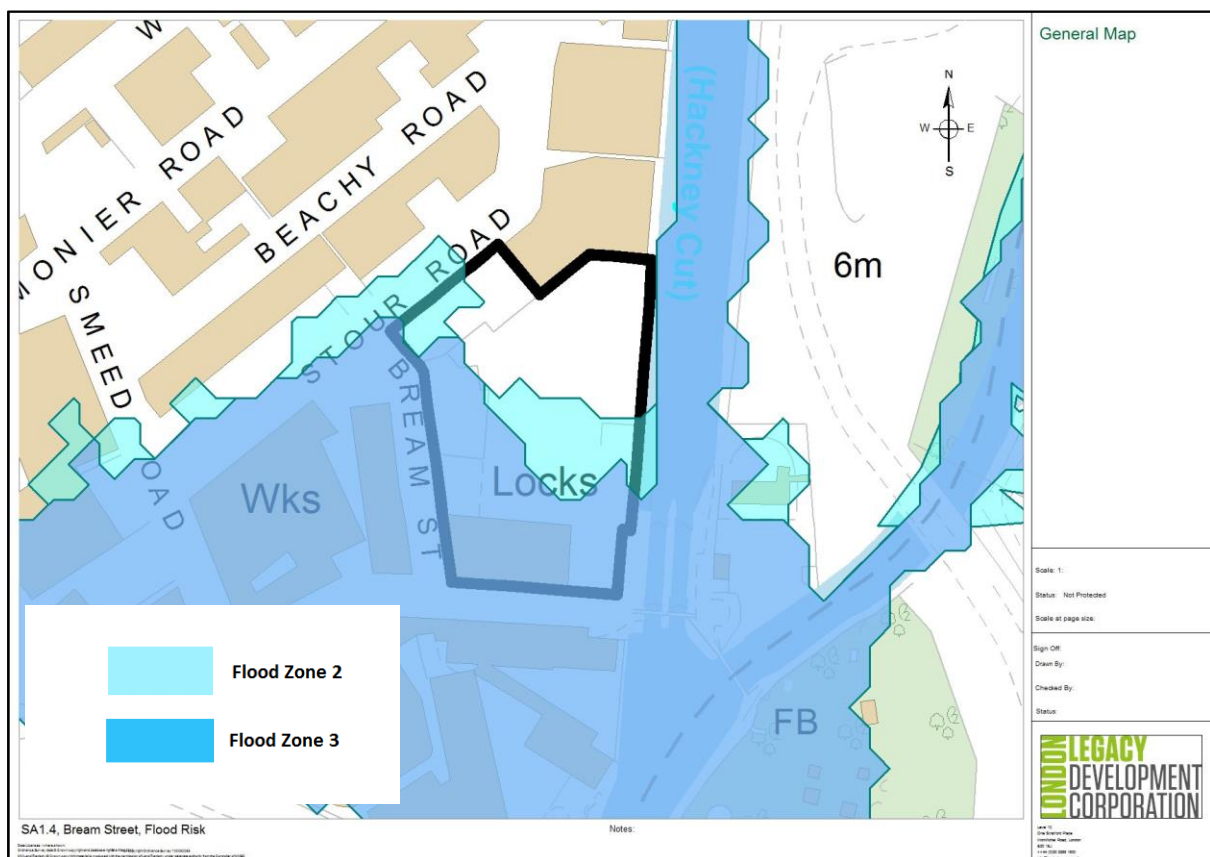


| Sequential Test | | |
|--|---|---|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This site is required in order to deliver the housing target and ensure that Fish Island contributes the identified level of potential housing towards this.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Community Use | Are there alternative sites available in Zone 1, 2 or 3? | No. The community use would be required to serve localised need with no other alternative sites available outside of flood zone 2 that would be locationally appropriate. |
| Conclusion: | A significant part of the site falls within Flood Zone 2. No other suitable site was available in a Flood Risk Zone of a lower category for the proposed uses. As such this site is the most suitable for the range of uses within the site allocation and therefore passes the Sequential Test. Development should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage systems. | |

Bream Street

| | | | |
|--|---|-------------------------------------|--|
| Site Allocation Reference | SA1.4: Bream Street | | |
| Site Allocation Name And Location | Bream Street. Site with Stour Road to the north, Lee Navigation to the east, Dace Road to the south and Bream Street to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zones 2 and 3 (Flood Zone 1 in northern part of the site) | More Vulnerable | Sequential Test Required |
| Business /employment Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|--|--|---|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This site is required in order to deliver the housing target and ensure that Fish Island contributes the identified level of potential housing towards this.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Conclusion: | The majority of the site falls within flood zones 2 and 3. Given that the site allocation includes residential use an Exceptions Test is required. | |

| Exceptions Test | |
|--|---|
| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | <p>A predominantly vacant and cleared site, this allocation is required in order to ensure that this part of the LLDC area contributes sufficiently towards the achievement of the London Plan and Local Plan housing target of 14,711 new homes and to support access to the Lee Navigation and delivery of local employment and improving the setting of heritage assets.</p> <p>The site allocation requirement for business space along with the northern part of the site being outside of Flood Zones 2 and 3, provide the opportunity for development to be designed and constructed in a manner that is suitable for the levels of identified flood risk.</p> |
| A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. | The LB Tower Hamlets SFRA 2 considers that the proposed development is unlikely to increase flood risk elsewhere. A site specific Flood Risk Assessment would be required to address this part of the Exceptions Test, and take into account any site recommendations from the level 2 SFRA. These include: |

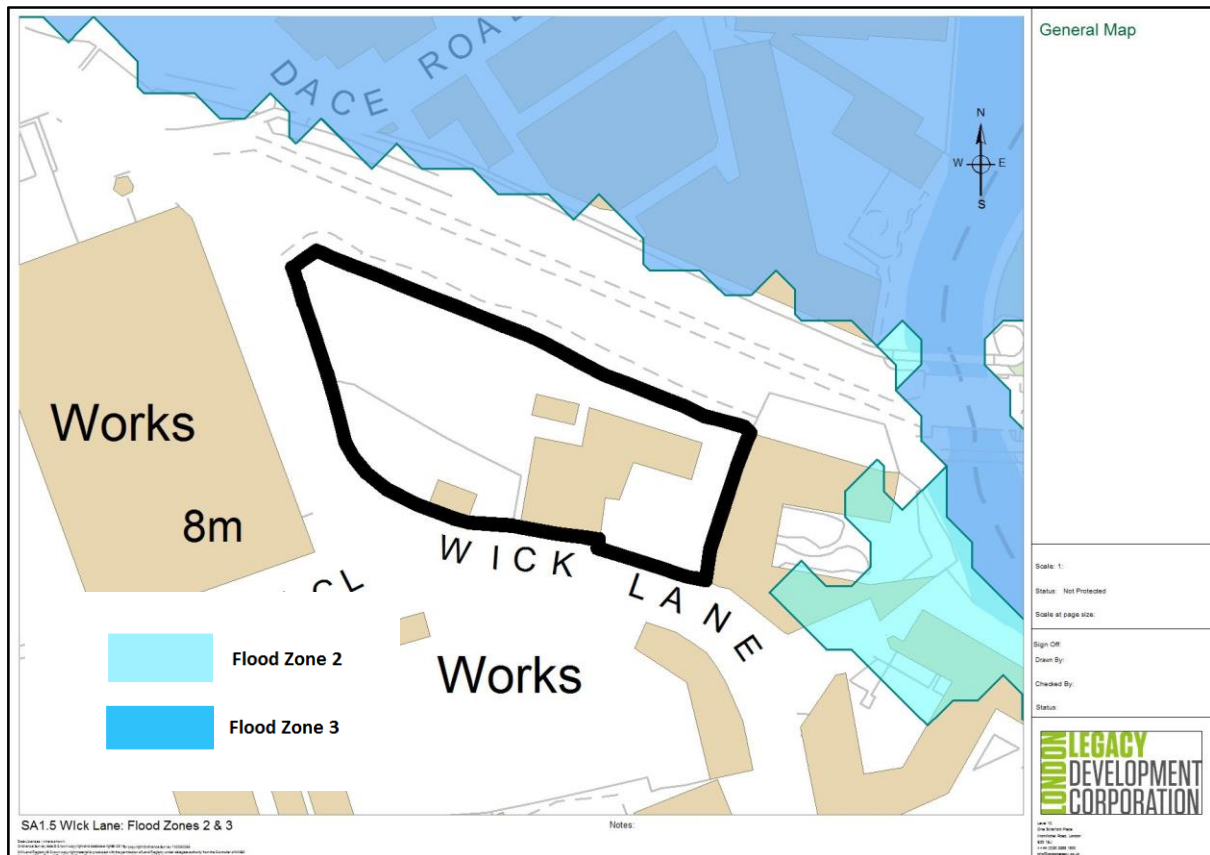
| | |
|------------|--|
| | <ul style="list-style-type: none"> • Development within areas shown to be at 'actual' risk of flooding may require compensatory storage to demonstrate there will be no loss of floodplain storage (Note that it might not be possible to increase building footprint size in some areas due to lack of land for flood storage compensation within the overall development area). • Development layout must consider surface water flow routes and manage runoff on site sustainably with a target to achieve Greenfield runoff rates. • Include 'at source' SUDS control measures to reduce existing site runoff in accordance with London Plan and local policy. • Open up river corridors and provide more floodplain storage. • Incorporation of flood resistance / resilience measures up to the flood level. • Application of the sequential approach at site level to be carried out to ensure 'more vulnerable' land uses are located within Flood Zones 1 and 2. • All residential accommodation to be located on first flood or above. • Consideration of safe access / egress from the site and safe refuge. • Implementation of a flood emergency plan. • Incorporation of flood resistance / resilience measures up to the flood level. • Design of development to consider mitigating the risk of groundwater flooding with use of impermeable materials. |
| Conclusion | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> |

Annex X: Flood Risk Sequential and Exceptions Tests for Site Allocations

415 Wick Lane

| | | | |
|--|--|-------------------------------------|--|
| Site Allocation Reference | SA1.5: 415 Wick Lane | | |
| Site Allocation Name And Location | 415 Wick Lane. Site with the Greenway to the north, Wick Lane to the south and west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zone 1 | More Vulnerable | Appropriate |
| Business /employment Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Sequential Test not required. Development should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage systems. | | |

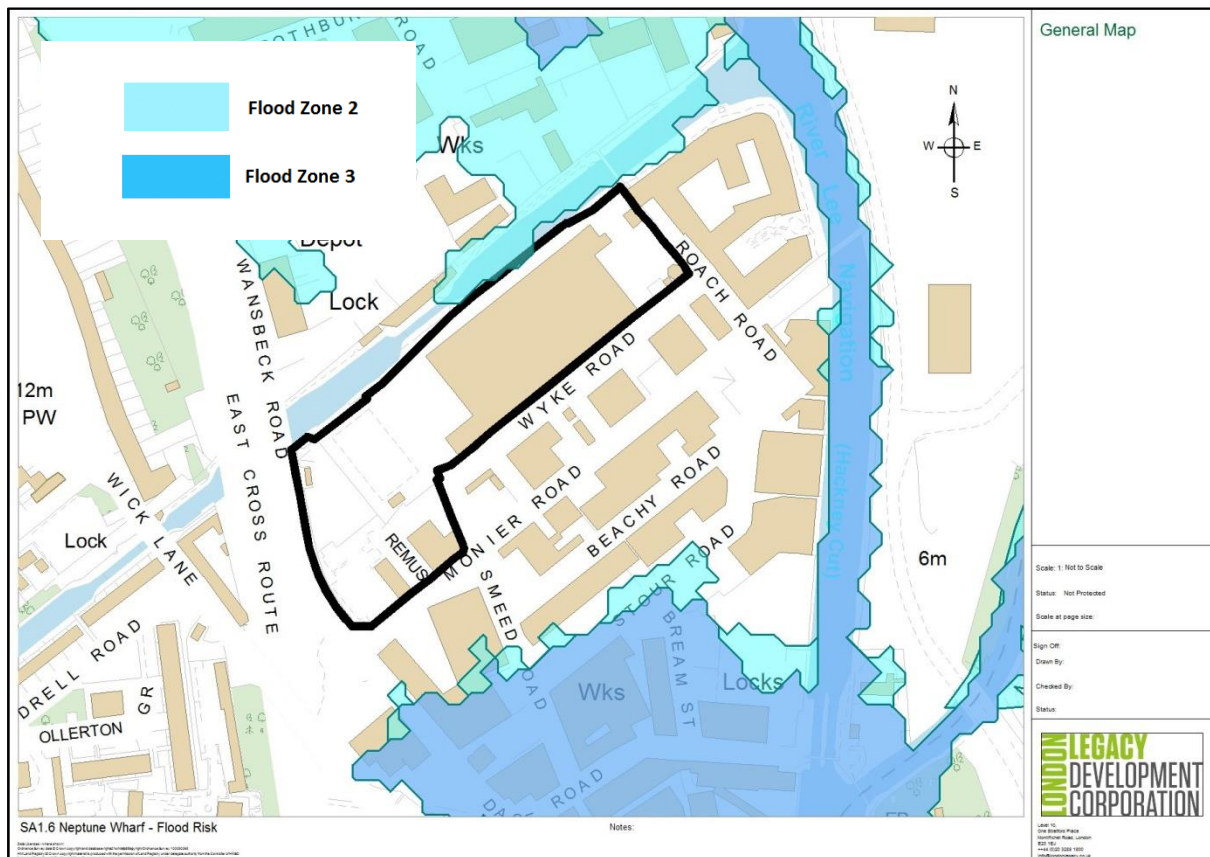
Site Allocation Flood Risk Map



Neptune Wharf

| | | | |
|--|---|-------------------------------------|--|
| Site Allocation Reference | SA1.6 Neptune Wharf | | |
| Site Allocation Name And Location | Neptune Wharf. Site with Hertford Union Canal to the north, Roach Road to the east, Wyke Road to the south and Wansbeck Road to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zones 1 and 2 (Flood Zone 2 only along element of northern edge of site) | More Vulnerable | Sequential Test Required |
| Community use (Primary school) | | More vulnerable | Sequential Test Required |
| Business /employment Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test for residential and community uses. | | |

Site Allocation Flood Risk Map

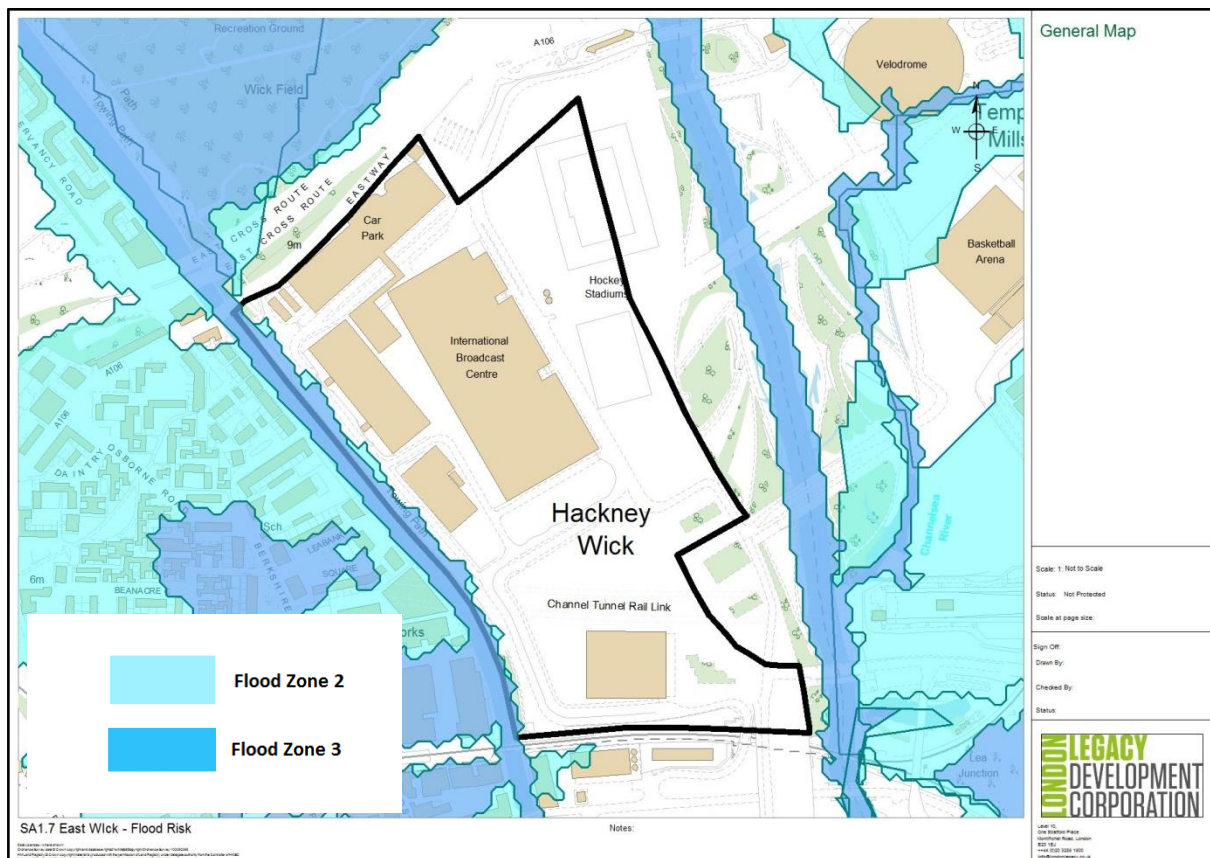


| Sequential Test | | |
|--|---|---|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This site is required in order to deliver the housing target and ensure that Fish Island contributes the identified level of potential housing towards this.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Community Use (primary school) | Are there alternative sites available in Zone 1, 2 or 3? | No. The school location would be in Flood Zone 1 and no other equivalent sites have been identified as available outside of Flood Zone 1. |
| Conclusion: | Based on the above criteria, no other suitable site was available in a Flood Risk Zone of a lower category for the proposed uses. As such this site is the most suitable for the range of uses and therefore passes the Sequential Test. Development should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage systems. | |

East Wick

| | | | |
|--|--|-------------------------------------|--|
| Site Allocation Reference | SA1.7 East Wick | | |
| Site Allocation Name And Location | East Wick. Land with the Queen Elizabeth Olympic Park to the east, Copper Box to the south and the Lee Navigation to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Site outside of Flood Zone 2 and 3. | More Vulnerable | Appropriate |
| Community use (including school) | | More vulnerable | Appropriate |
| Retail and leisure | | Less vulnerable | Appropriate |
| Business/employment | | Less vulnerable | Appropriate |
| Open Space | | Water Compatible | Appropriate |
| Conclusion | Sequential Test not required. | | |

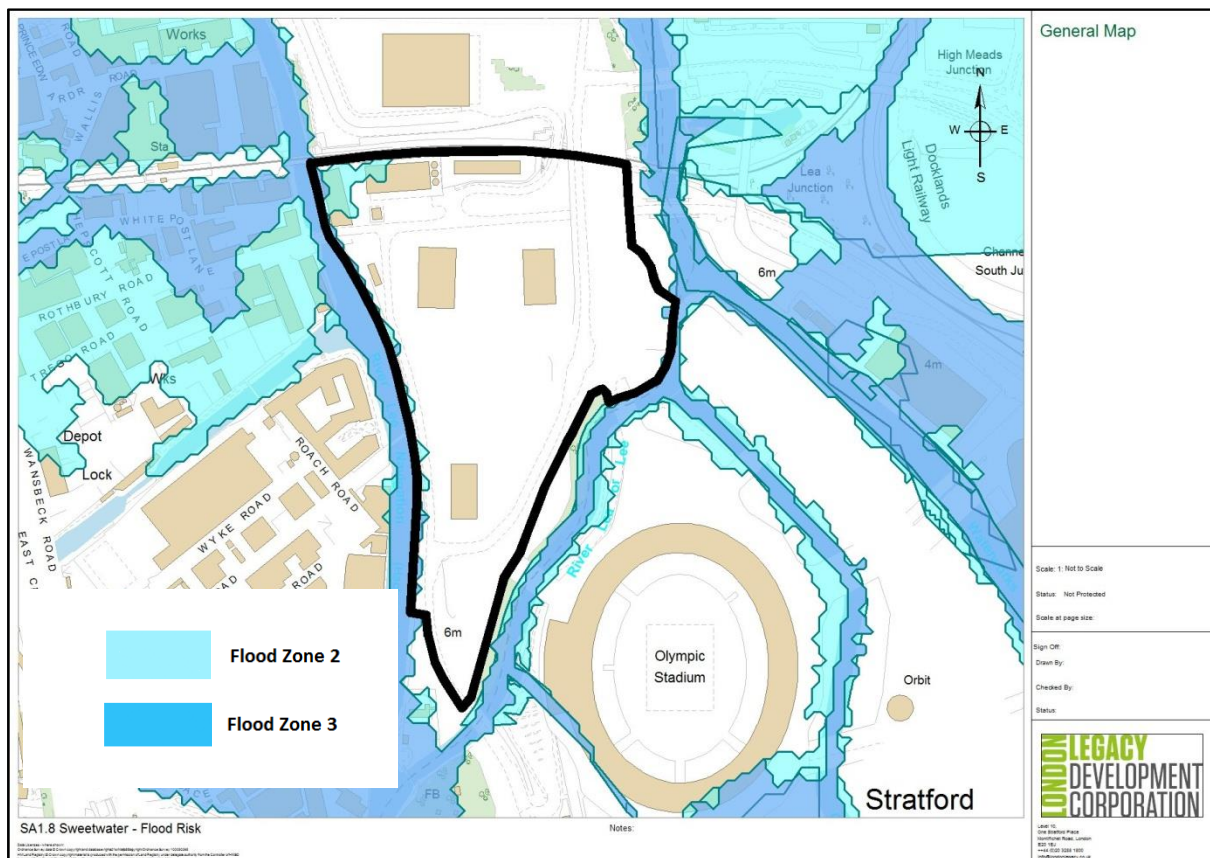
Site Allocation Flood Risk Map



Sweetwater

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|--|---|-------------------------------------|--|
| Site Allocation Reference | SA1.8 Sweetwater | | |
| Site Allocation Name And Location | Sweetwater. Area east of the Lee Navigation, south of the London Overground Railway Line. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Site outside of Flood Zone 2 and 3. | More Vulnerable | Appropriate |
| Community use (including school) | | More vulnerable | Appropriate |
| Retail and leisure | | Less vulnerable | Appropriate |
| Business/employment | | Less vulnerable | Appropriate |
| Open Space | | Water Compatible | Appropriate |
| Conclusion | The only area within flood Zone 2 is a small part of the Kings Yard Energy Centre, the remainder of the site comprises the developable area and is outside both Flood Zones 2 and 3. A Sequential Test, is therefore, not required. | | |

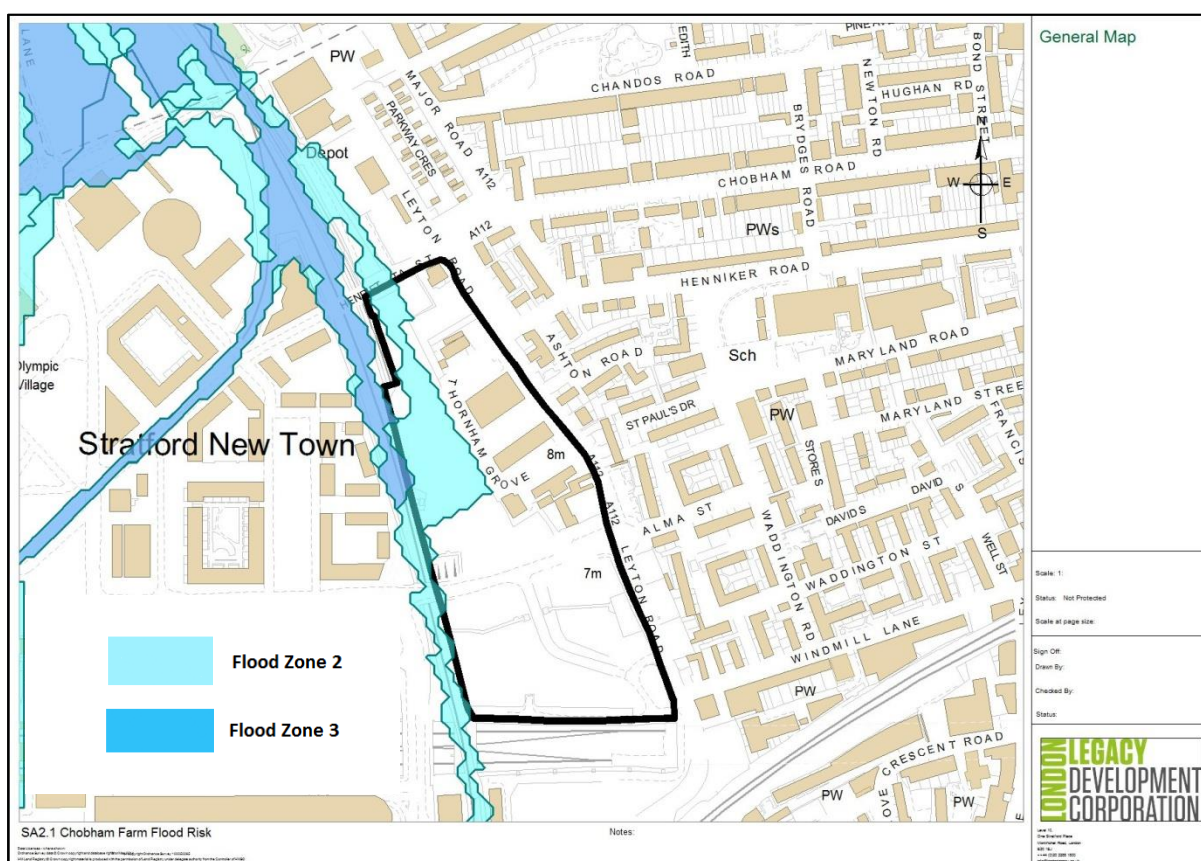
Site Allocation Flood Risk Map



Chobham Farm

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|--|--|-------------------------------------|--|
| Site Allocation Reference | SA2.1 Chobham Farm | | |
| Site Allocation Name And Location | Chobham Farm. Area of land with Henrietta Street to the north, Leyton Road to the east, High Speed 1 Railway to the south and railway lines to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zone 2 (lower western part of site) | More Vulnerable | Sequential Test Required |
| Retail | | Less Vulnerable | Appropriate |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



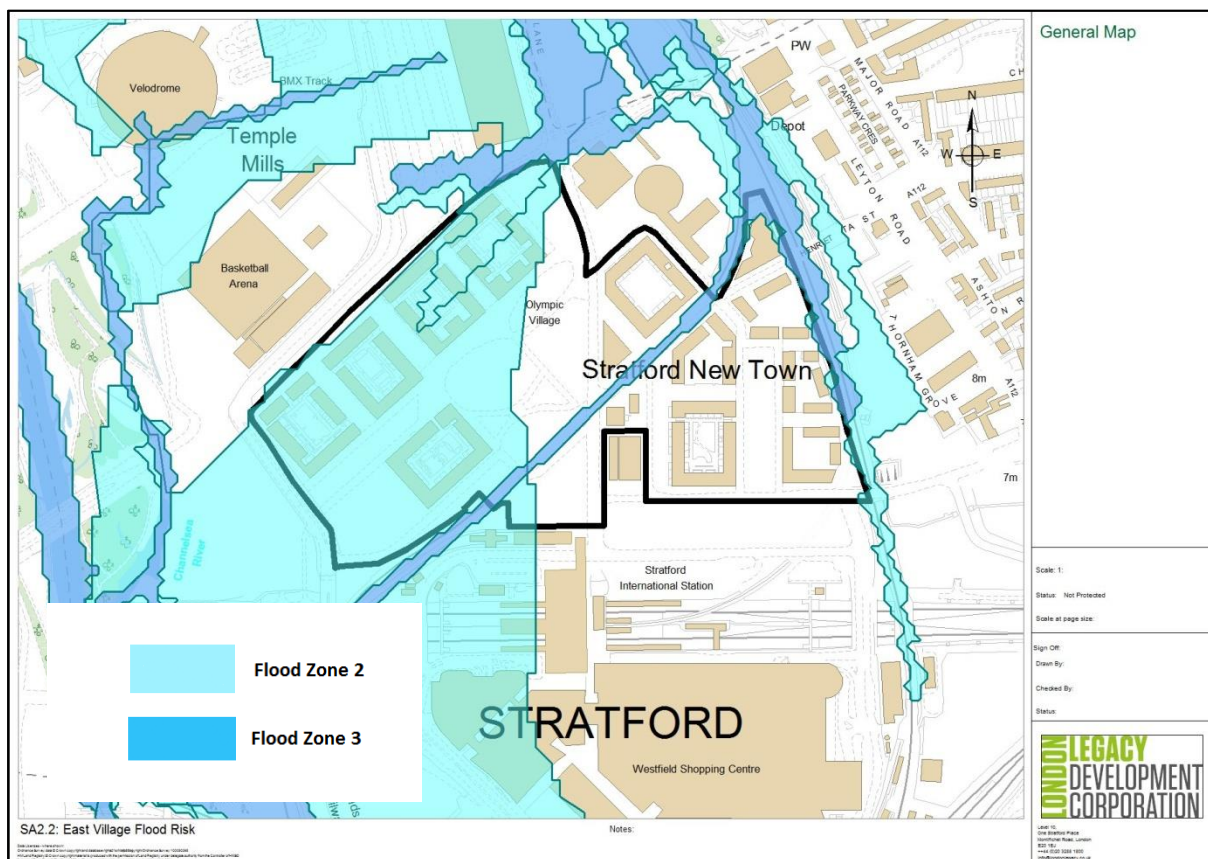
| Sequential Test | | |
|---------------------------------|--|---|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This |

| | | |
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| | | <p>is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Retail | Are there alternative sites available in Zone 1, 2 or 3? | No, the retail element is local in scale to serve the wider development and required given the scale of the development opportunity for other uses that the site represents. No other more local opportunity for provision of space to perform this function would be available. |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | No. The business space is required in order to continue elements of the business/economic role previously performed by the site as a whole. Other available sites within the LLDC area are required for delivery of large scale residential and other use to meet housing targets, economic development need and provide for the accompanying range of supporting uses. |
| Conclusion: | <p>While an element of the site is within Flood Zone 2, the LB Newham SFRA concludes that an exceptions test is not required for this site. Site specific flood risk assessment would, however be required for any new development proposal within the area of the site that falls within Flood Zone 2. The SFRA recommends that less vulnerable uses are placed in the flood risk area and that finished floor levels are above the 1 in 100 year plus climate change flood extent to be 'safe' with floor levels raised to 6.35mAOD or higher (including freeboard). It is also recommended that development layout must consider surface water overland flow routes and managing runoff on site sustainably, including 'at source' SUDS control measures to reduce existing site runoff.</p> | |

East Village

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|--|--|-------------------------------------|--|
| Site Allocation Reference | SA2.2 East Village | | |
| Site Allocation Name And Location | East Village. Area of land with Honour Lea Avenue to the north, railway line to the east, The International Quarter and Stratford International Station to the south and Queen Elizabeth Olympic Park to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zone 2 (western part of site). Minor element of site in its north-east in Flood Zone 3. | More Vulnerable | Sequential Test Required |
| Retail | | Less Vulnerable | Appropriate |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--------------------------|------------|
| Uses within the site allocation | Stage in Sequential Test | Assessment |

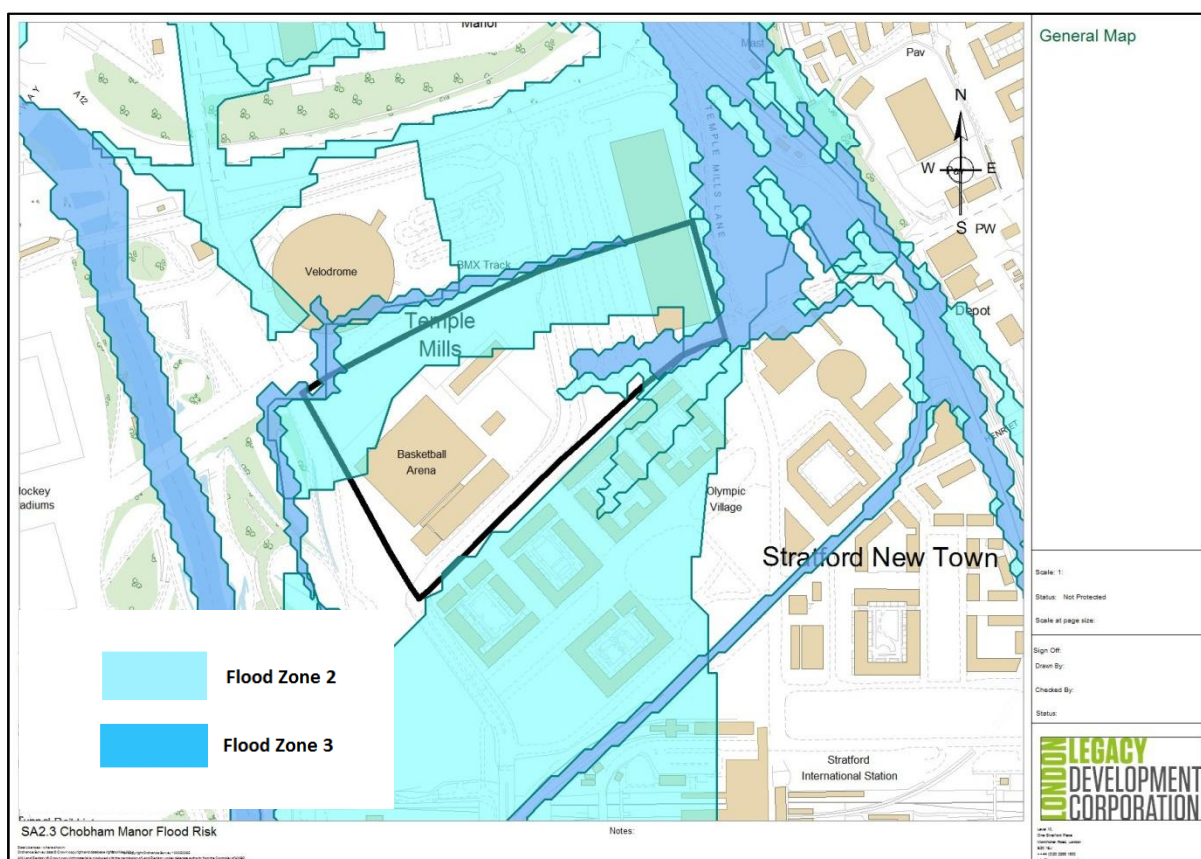
| | | |
|----------------|--|--|
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> <p>This site has an extant planning permission for predominantly residential development, with that proposal having been the subject of a site and scheme specific flood risk assessment</p> |
| Retail | Are there alternative sites available in Zone 1, 2 or 3? | <p>No. The Local Centre identified in the Site Allocation has been predominately constructed and remaining development plots within its boundary represent an opportunity to provide floorspace that will complete the function of the centre. Given the local role of the centre. No alternative site are therefore available outside of the flood risk area.</p> |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | <p>No. Business space would also be concentrated within the Local centre and form a minor element of the proposed development overall. The configuration of completed development would not facilitate additional locations outside of the flood risk area within the site or its surroundings.</p> |
| Conclusion: | <p>Parts of the site are within Flood Zone 2 with a minor element to the north and east falling within Flood Zone 3. As the site is the subject of an extant planning permission equivalent to the site allocation, with the majority of development plots now completed</p> | |

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| | <p>and that scheme having been subjected to detailed flood risk assessment that has found the uses and their configuration acceptable, it is not considered that an Exceptions Test is required.</p> |
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Chobham Manor

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|--|---|-------------------------------------|--|
| Site Allocation Reference | SA.2.3 Chobham Manor | | |
| Site Allocation Name And Location | Chobham Manor. Area of land with Lee Valley Velopark to the north, railway line to the east, Honour Lea Avenue to the south and Queen Elizabeth Olympic Park to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zone 2 (northern part of site, minor element of Flood Zone 3 (far eastern part of site)). | More Vulnerable | Sequential Test Required |
| Community use | | More Vulnerable | Sequential Test Required |
| Retail | | Less Vulnerable | Appropriate |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--|--|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | No, the Further Alterations to the London Plan 2014 identify a |

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| | | <p>10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> <p>This site has an extant planning permission for predominantly residential development, with that proposal having been the subject of a site and scheme specific flood risk assessment.</p> |
| Community Use | Are there alternative sites available in Zone 1, 2 or 3? | No. the community use is an inherent ancillary part of the main residential purpose of the site allocation, with other community use space or land for such space being available to serve the communities immediately adjacent to them. |
| Retail | Are there alternative sites available in Zone 1, 2 or 3? | No. Any retail element of development in this location would be minor and ancillary to the residential use. More significant retail use is directed to the Local Centre at East Village. |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | No. Any business space would be minor in extent and ancillary to the main residential use. |
| Conclusion: | Parts of the site are within Flood Zone 2 with a minor element to the east falling within Flood Zone 3. As the site allocation requires development of the majority of the site an exceptions test is required for development of those parts of the site. | |

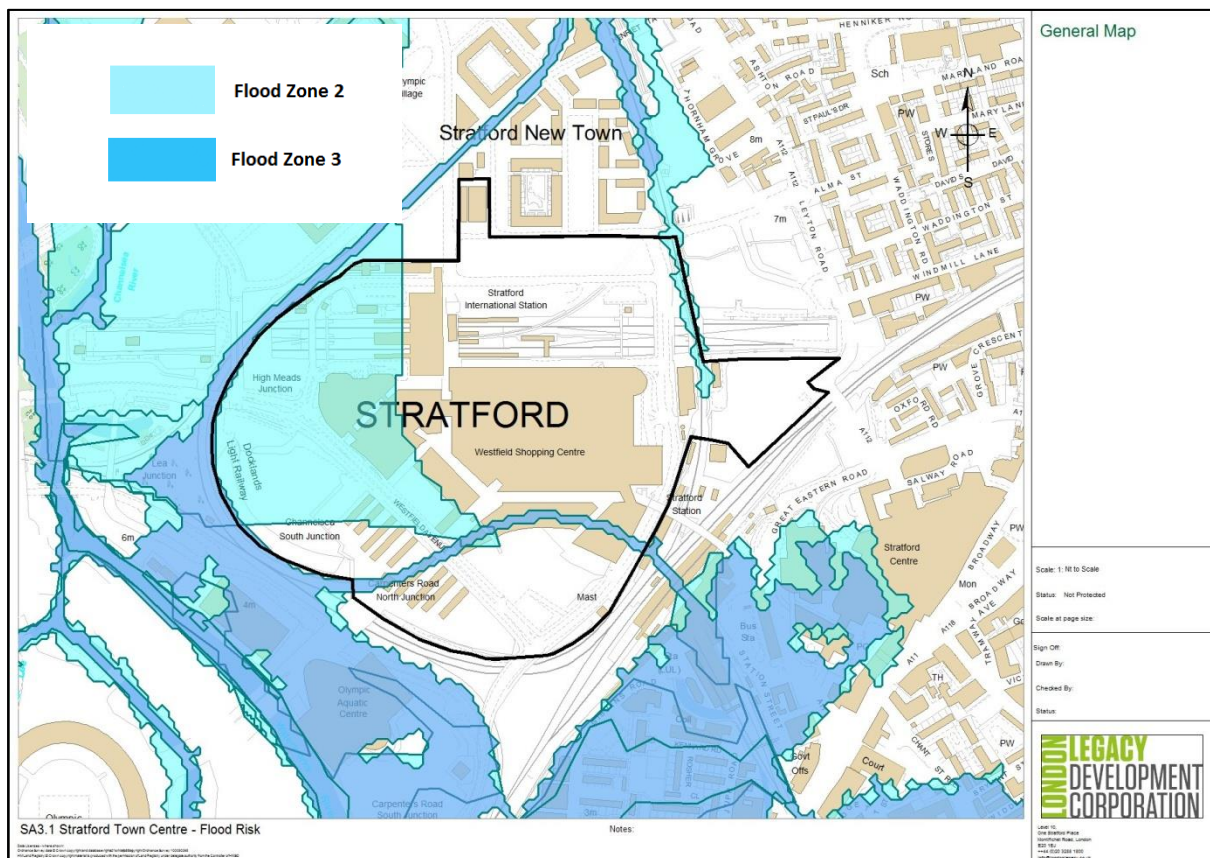
| Exceptions Test | |
|--|---|
| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to provide a significant number of new homes and new employment uses on brownfield land that has previously been earmarked for redevelopment and regeneration in earlier adopted plans. The site capacity is also required to meet the London Plan housing target for the LLDC area and the housing target to 2031 within the Publication Local Plan of 14,711. |
| A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. | <p>The LB Newham SFRA did not consider this area in detail as a site allocation. However, detailed flood risk assessment for this site has been carried out as part of the wider Legacy Communities Scheme outline planning permission. This FRA builds on the flood risk assessment work that informed and assessed the remodelling of the Queen Elizabeth Olympic Park as a whole. This has taken account of the reduced flood risk from the introduction of the parklands wetlands bowl area and landscape reprofiling and the culverting of the Channelsea River. The scheme that has planning permission is equivalent to the site specific allocation within the Local Plan and the associated FRA has been able to demonstrate that this form, quantum and general location of development types within the site is acceptable from a flood risk perspective.</p> <p>Any change to the approved scheme or future alternative schemes would need to take account of the following:</p> <p>Adoption of a sequential approach to location of the most vulnerable elements of any scheme to higher ground within the site;</p> <p>Ensure that the form of development does not obstruct any predicted flood flow path.</p> <p>The finished floor levels in these areas should be above the 1 in 100 year (1% AEP) plus climate change fluvial breach levels.</p> <p>Or</p> <p>'Less vulnerable' uses on ground floors within these areas with 'more vulnerable' uses above the maximum 1 in 100 year (1% AEP) plus climate</p> |

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| | <p>change fluvial breach levels at the time of assessment.</p> <p>Take into account the conclusions with the Newham Surface Water Management Plan</p> |
| <p>Conclusion</p> | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> <p>It is also noted that part of the site has a current planning permission for comprehensive development that complies with the site allocation requirements and has been subject to a site specific flood risk assessment for that scheme. It is also noted that the wider reprofiling and landscaping works within the Queen Elizabeth Olympic Park parklands has reduced fluvial flood risk on sites within and downstream, including Chobham Manor.</p> |

Stratford Town centre Extension

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|--|--|-------------------------------------|--|
| Site Allocation Reference | SA3.1 Stratford Town Centre Extension | | |
| Site Allocation Name And Location | Stratford Town Centre. Land at former Stratford Rail lands comprising Westfield Stratford and the International Quarter. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Part in Flood Zone 2 | More Vulnerable | Sequential Test Required |
| Retail & Leisure | | Less Vulnerable | Appropriate |
| Business/office Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map

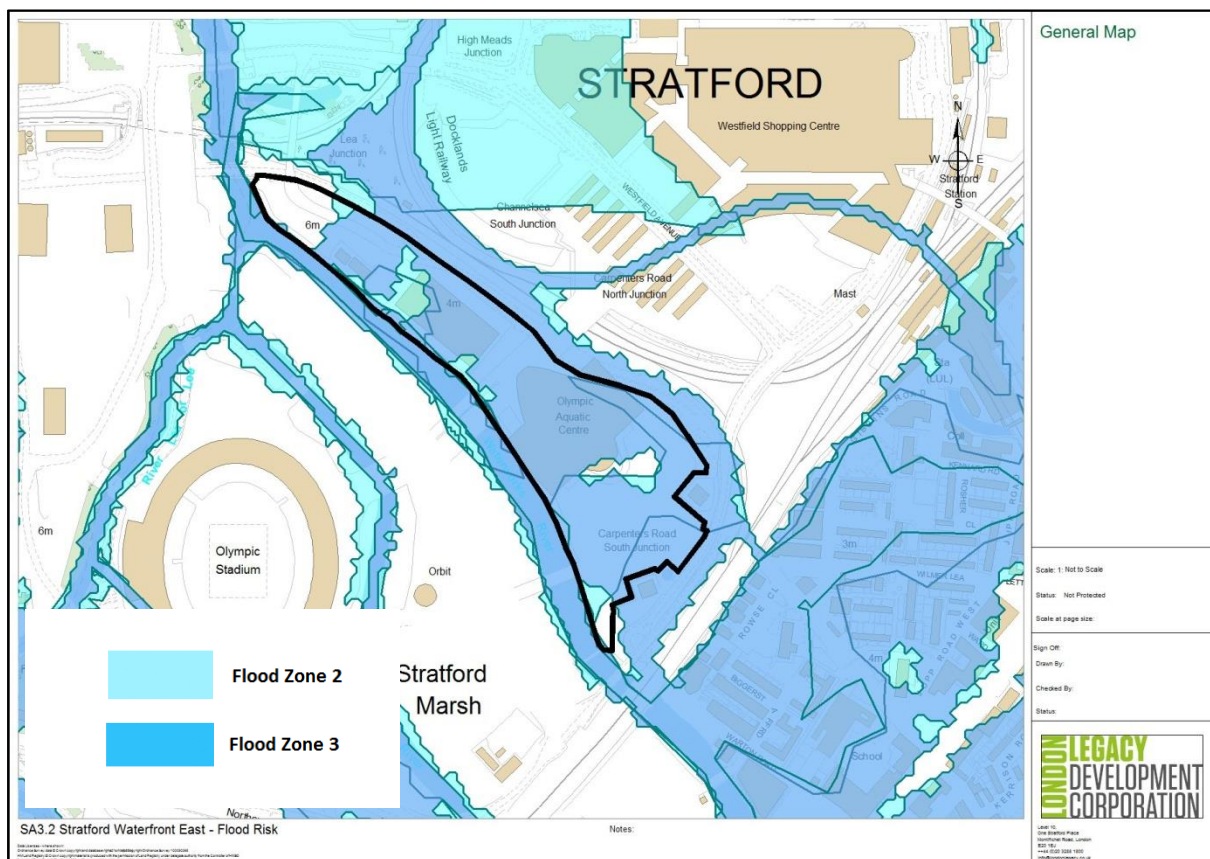


| Sequential Test | | |
|--|---|--|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No. The land for the site has been raised substantially above the flood risk levels. The Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Retail | Are there alternative sites available in Zone 1, 2 or 3? | No. The substantial element of permitted retail floorspace is already constructed. This and any land available for additional minor elements of retail and leisure use has been raised substantially above the flood level. |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | No. The site allocation area includes substantial consented office floorspace. The site provides a strategic reserve of land for office floorspace within London for which there is no equivalent available site reflecting the London Plan Metropolitan Centre designation of Stratford Town Centre as a whole. |
| Conclusion: | With only the western half of the site falling within Flood Zone 2 and the entirety of the site that provides a platform for development having been substantially raised above the predicted flood level, there is not considered to be actual flood risk that would effect development within this site. It is, therefore considered that an exceptions test is not required. | |

Stratford Waterfront East

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|--|--|-------------------------------------|--|
| Site Allocation Reference | SA3.2 Stratford Waterfront East | | |
| Site Allocation Name And Location | Stratford Waterfront East. Site bounded by Carpenters Road to the north and east, Great Eastern Railway Line to the south and Waterworks River to the west and including the London Aquatics Centre. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Predominantly Flood Zone 3, with an element within Flood Zone 2. | More Vulnerable | Sequential Test Required |
| Retail and Leisure | | Less vulnerable | Appropriate |
| Community Use (Education) | | More Vulnerable | Sequential Test Required |
| Open Space | | Water Compatible | Appropriate |
| Conclusion | Sequential Test is required. | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--|---|
| Uses within the site allocation | Stage in Sequential Test | Assessment |
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the |

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|---------------------------|---|---|
| | | <p>LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Community Use (Education) | Are there alternative sites available in Zone 1, 2 or 3? | No. No suitable alternative sites in terms of size and location are available that do not already have an extant and deliverable planning permission and are not also within Flood Zone 3. |
| Retail and Leisure | Are there alternative sites available in Zone 3 with a lower risk of flooding? | No. The retail and leisure space is required in as a key part of the regeneration and economic strategy for the area as a whole and provides the opportunity for provision of ground floor uses compatible with the level of flood risk within the site. |
| Conclusion: | While much of the site is within Flood Zone 3, the site is also subject to an extant planning permission for range of uses compatible with the Site Allocation and that proposal has been subject to a development and site specific flood risk assessment. Given the lack of alternatives within the LLDC area and its vicinity, it is considered that an Exceptions Test is required. | |

| Exceptions Test | |
|---|---|
| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to provide a significant number of new homes and meet the leisure, education and cultural aspirations that are key to achieving the overall spatial strategy for the LLDC area as asset out in the Local Plan. The site provides the only location with the sustainable transport connections and a location adjacent to the Metropolitan Centre of Stratford that will meet this identified need and allow a significant contribution towards meeting the London Plan housing target for the LLDC area and the housing target to 2031 within the |

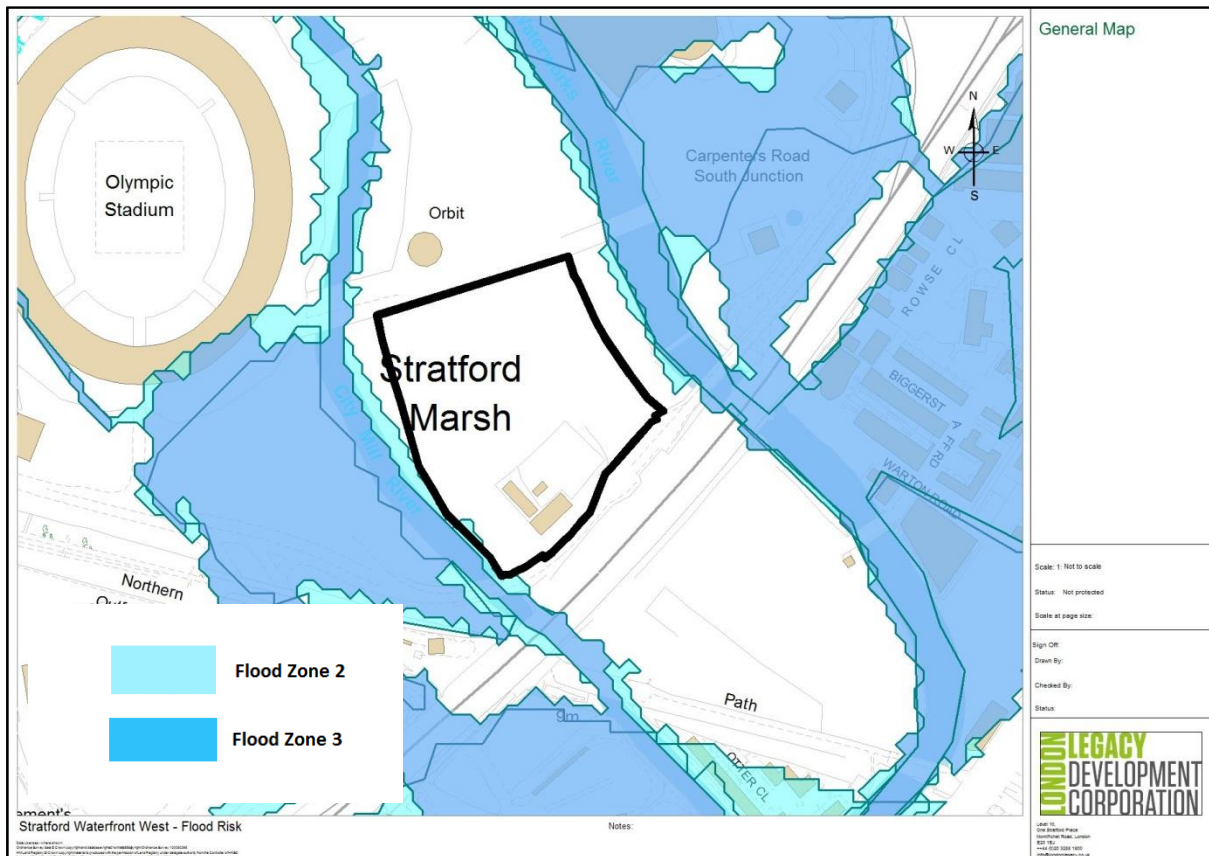
| | |
|---|---|
| | Publication Local Plan of 14,711. |
| <p>A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.</p> | <p>The LB Newham SFRA did not consider this area in detail as a site allocation. However, detailed flood risk assessment for this site has been carried out for the whole of the site as part of the Legacy Communities Scheme outline planning permission. This FRA builds on the flood risk assessment work that informed and assessed the remodelling of the Queen Elizabeth Olympic Park as a whole, which is considered to have reduced the risk of fluvial flooding downstream and at this site. The extant planning permission has established the acceptability of the range of uses identified within the site allocation. Any significant change in the consented development or any new development proposal within the site will require a new development and site specific Flood Risk Assessment and will need to consider:</p> <p>Adoption of a sequential approach to location of the most vulnerable elements of any scheme to higher ground within the site;</p> <p>The finished floor levels in these areas should be above the 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Or</p> <p>'Less vulnerable' uses on ground floors within these areas with 'more vulnerable' uses above the maximum 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Where appropriate 'less vulnerable' uses on ground floors to incorporate flood resilience or resistance measures and buildings designed to withstand the hydrostatic forces from a breach.</p> <p>Take into account the conclusions with the Newham Surface Water Management Plan</p> |
| Conclusion | Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk for the |

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| | <p>uses proposed given the site size and location. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> <p>It is also noted that part of the site has a current planning permission for comprehensive development that complies with the site allocation requirements and has been subject to a site specific flood risk assessment for that scheme. It is also noted that the wider reprofiling and landscaping works within the Queen Elizabeth Olympic Park parklands has reduced fluvial flood risk on sites within and downstream, including this site.</p> |
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Stratford Waterfront West

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| Site Allocation Reference | SA3.3 Stratford Waterfront West | | |
| Site Allocation Name And Location | Stratford Waterfront West. Site with AccelorMittal Orbit to the north, Waterworks River to the east, Great Eastern Railway to the south and City Mill River to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Site outside of Flood Zone 2 and 3. | More Vulnerable | Appropriate |
| Public Open Space/Playing Field | | Water Compatible | Appropriate |
| Conclusion | Sequential Test not required. | | |

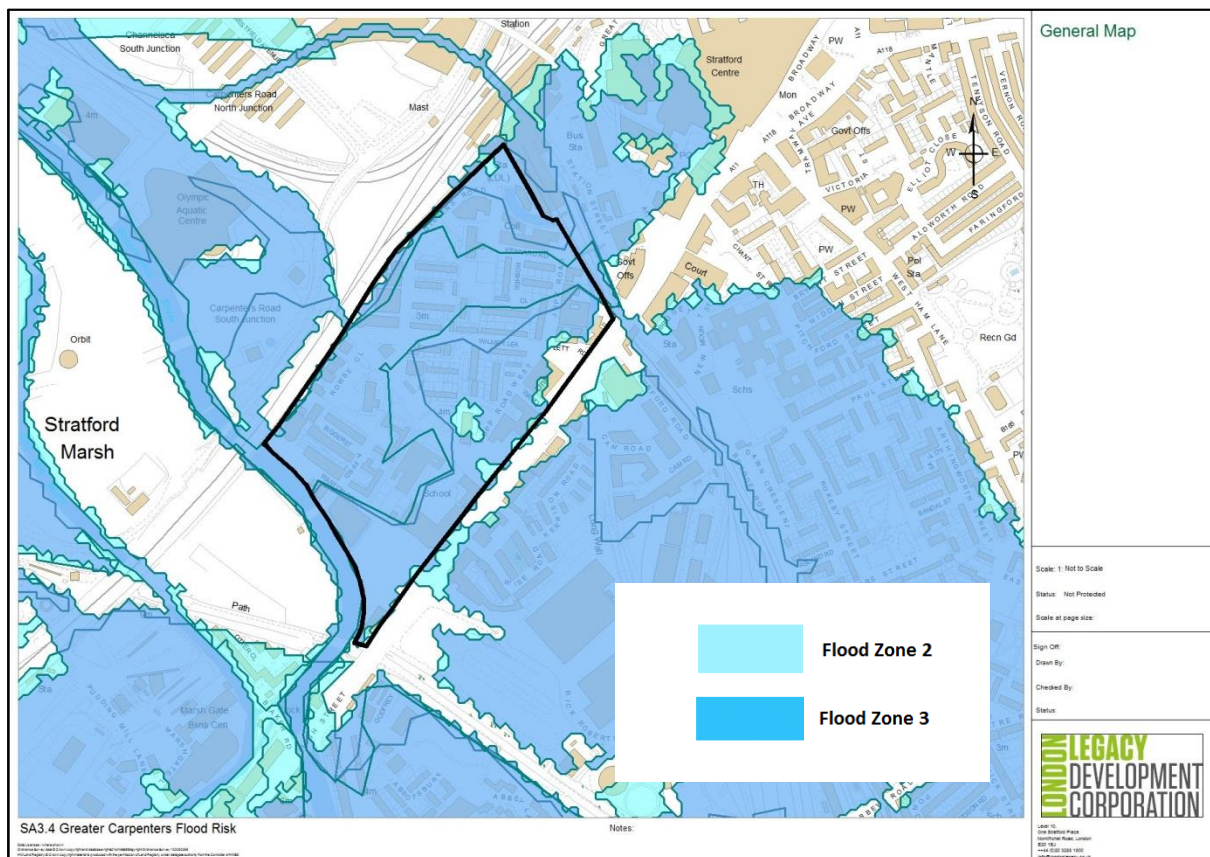
Site Allocation Flood Risk Map



Greater Carpenters

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| Site Allocation Reference | SA3.4 Greater Carpenters District | | |
| Site Allocation Name And Location | Greater Carpenters. Area bounded by Great Eastern Railway line and DLR to the north, Stratford regional Station to the east, Stratford High Street to the south and Waterworks River to the east. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | 2 and 3 | More Vulnerable | Sequential Test Required |
| Community Uses | | More Vulnerable | Sequential Test Required |
| Retail | | Less Vulnerable | Appropriate |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--------------------------|------------|
| Uses within the site allocation | Stage in Sequential Test | Assessment |

| | | |
|----------------|--|---|
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Community Uses | Are there alternative sites available in Zone 1, 2 or 3? | <p>No. The community use space is required to serve the residential and business community. The area currently includes community centres, medical facilities and primary school that will need to be retained or reprovided in order to ensure a consistent level of service provision for the location and its surrounding areas. The developed nature of the surrounding area has resulted in no alternative sites outside of flood zone 2 and 3 being available.</p> |
| Retail | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, any retail element would be local and serve the immediate needs of the community. No other more local opportunity for provision of space to perform this function would be available in this context.</p> |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | <p>No. The site allocation area includes existing business space and retention or re-provision is a key part of the wider plan strategy for economic and business growth. No additional sites within the LLDC area are available to meet this need.</p> |
| Conclusion: | <p>With the majority of the site falling within Flood Zone 3 an Exceptions Test is required.</p> | |

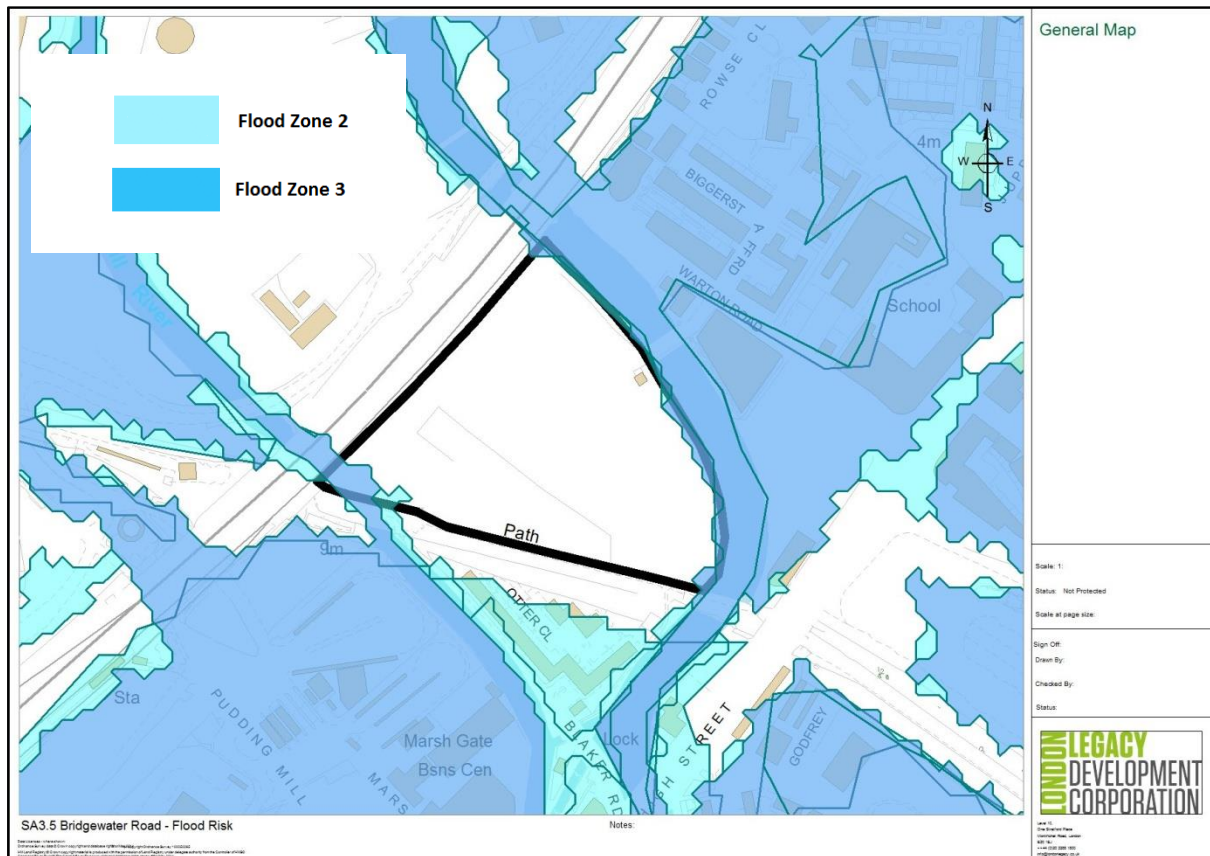
| Exceptions Test | |
|--|--|
| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to retain , increase or re-provide a significant number of new homes and new employment uses within this location in accordance with the Strategic Site Allocation within the LB Newham Core Strategy (2012). The site capacity is also required to ensure that the LLDC area as a whole can its London Plan housing target and the housing target to 2031 within the Publication Local Plan of 14,711. |
| A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. | <p>The LB Newham SFRA considers that development of the area which includes this site would be unlikely to increase flood risk elsewhere. A site specific Flood Risk Assessment would be required for specific development proposals, taking into account the conclusions of the LB Newham SRFA and any subsequently updated flood risk information.</p> <p>These are likely to include:</p> <p>Adoption of a sequential approach to location of the most vulnerable elements of any scheme to higher ground within the site;</p> <p>Set back development from the watercourses;</p> <p>The finished floor levels in these areas should be above the 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Or</p> <p>'Less vulnerable' uses on ground floors within these areas with 'more vulnerable' uses above the maximum 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Where appropriate 'less vulnerable' uses on ground floors to incorporate flood resilience or resistance measures and buildings designed to withstand the hydrostatic forces from a breach.</p> |

| | |
|-------------------|---|
| | <p>Development layout must consider surface water overland flow routes and managing runoff on site sustainably.</p> <p>Include at source SUDS control measures to reduce existing site run-off.</p> <p>Take into account the conclusions with the Newham Surface Water Management Plan</p> |
| <p>Conclusion</p> | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> <p>It is also noted that the wider reprofiling and landscaping works within the Queen Elizabeth Olympic Park parklands has reduced fluvial flood risk on sites downstream, including the Greater Carpenters area.</p> |

Bridgewater Road

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| Site Allocation Reference | SA3.5 Bridgewater Road | | |
| Site Allocation Name And Location | Bridgewater Road. Site bounded to the north by DLR and Great Eastern Railway lines, to the east and south by the Waterworks River and to the west by the Greenway. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Site outside of Flood Zone 2 and 3. | More Vulnerable | Appropriate |
| Public Open Space/Playing Field | | Water Compatible | Appropriate |
| Conclusion | Sequential Test not required. | | |

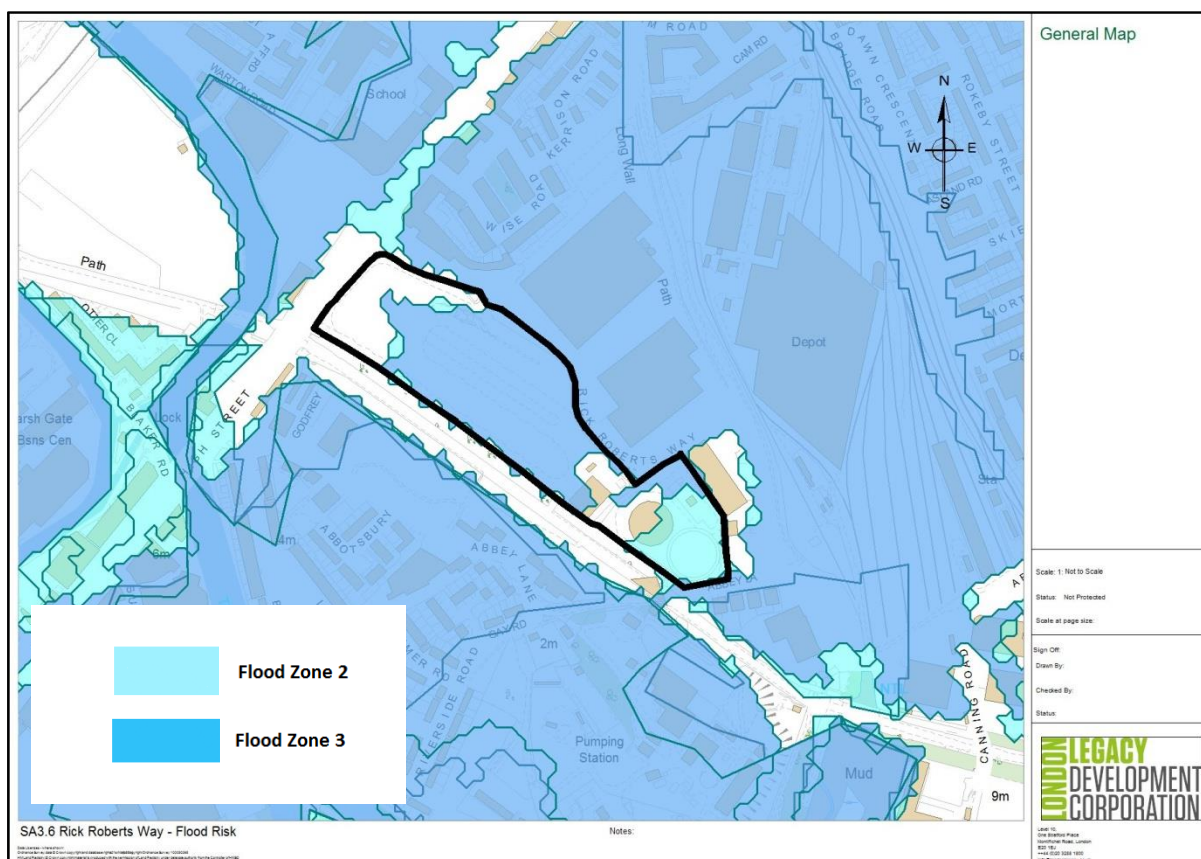
Site Allocation Flood Risk Map



Rick Roberts Way

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| Site Allocation Reference | SA3.6 Rick Roberts Way | | |
| Site Allocation Name And Location | Rick Roberts Way. Land between Stratford High Street to the north, Rock Roberts Way to the east, Abbey Lane to the south and the Greenway to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zone 3(Central part of site) and Flood Zone 2 (southern part of site) | More Vulnerable | Sequential Test Required |
| Community (School) | | More Vulnerable | Sequential Test Required |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space/Playing Field | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--------------------------|------------|
| Uses within the site allocation | Stage in Sequential Test | Assessment |

| | | |
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| Residential | Are there alternative sites available in Zone 1, 2 or 3? | No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need. All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers). |
| Community Use (School) | Are there alternative sites available in Zone 1, 2 or 3? | No. No suitable alternative sites in terms of size and location are available that do not already have an extant and deliverable planning permission and are not also within Flood Zone 3. |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | No. The business space within the alternative site option is required in order to continue elements economic role previously performed by the site and compliment the adjacent business premises cluster. |
| Conclusion: | While the site has a significant central element within flood zone 3 and its southern area within Flood Zone 2, the central and northern parts of the site are the subject of an extant planning permission for residential use and for a Secondary school, which has been subject to site specific Flood Risk Assessment for that proposal in this location, concluding that the proposed uses were acceptable. The southern part of the site is not however, does not have an extant planning permission. Given this and the level of potential flood risk, an Exceptions Test is required. | |

| Exceptions Test | |
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| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to provide a significant number of new homes and meet the identified need for a new secondary school/all-through school, or within its sequential use alternative, a primary school. Within this alternative it also provides an opportunity to |

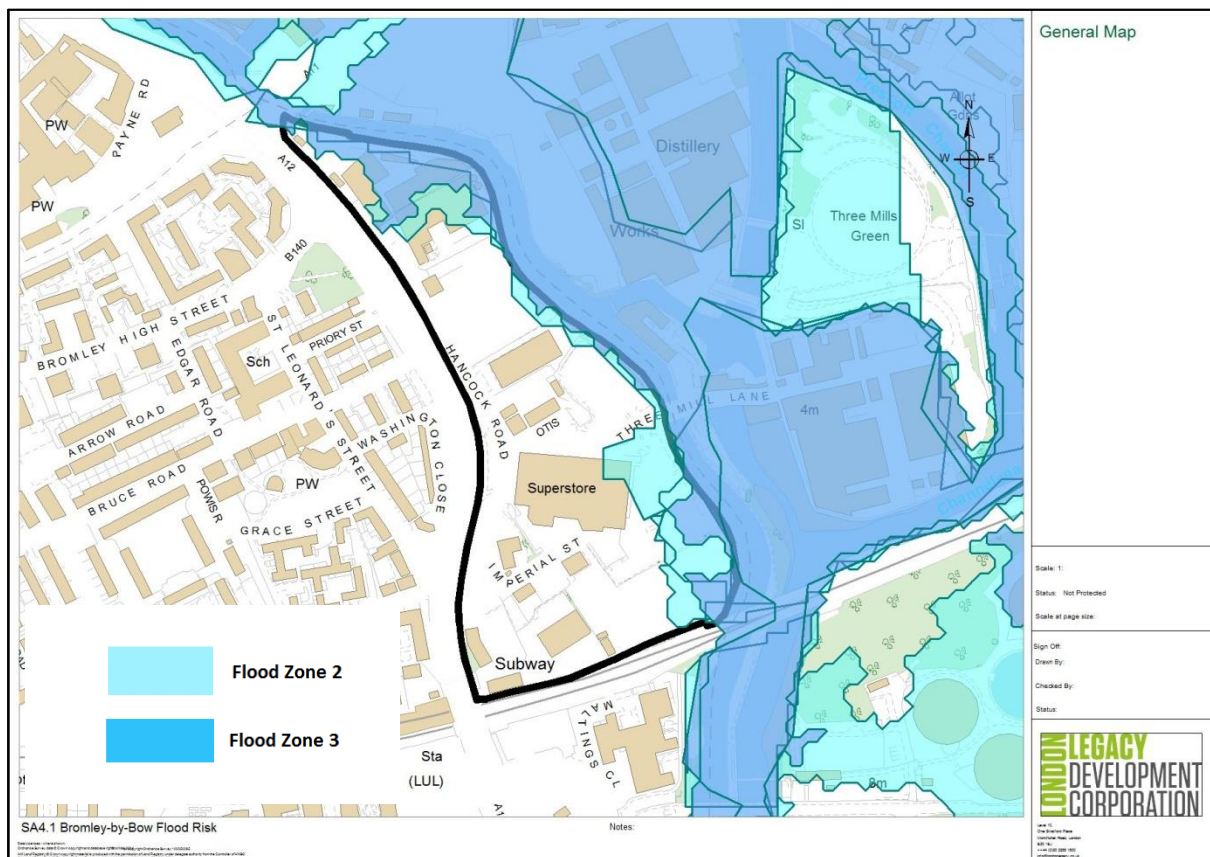
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| | <p>provide a minor additional element of business space. The site capacity for residential use is required to meet the London Plan housing target for the LLDC area and the housing target to 2031 within the Publication Local Plan of 14,711.</p> |
| <p>A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.</p> | <p>The LB Newham SFRA did not consider this area in detail as a site allocation. However, detailed flood risk assessment for this site has been carried out for the majority of the site area as part of the Legacy Communities Scheme outline planning permission. This FRA builds on the flood risk assessment work that informed and assessed the remodelling of the Queen Elizabeth Olympic Par as a whole, which is considered to have reduced the risk of fluvial flooding down stream. The extant planning permission has established the acceptability of residential and community (school) uses within the central and northern part of the site. Where a change in proposed development , or new scheme comes forward within that part of the site, or where a development proposal comes forward on the Gas Holder site in the south of the site allocation, a development and site specific Flood Risk Assessment will be required and the following should be taken into account:</p> <p>Adoption of a sequential approach to location of the most vulnerable elements of any scheme to higher ground within the site;</p> <p>The finished floor levels in these areas should be above the 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Or</p> <p>'Less vulnerable' uses on ground floors within these areas with 'more vulnerable' uses above the maximum 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Where appropriate 'less vulnerable' uses on ground floors to incorporate flood resilience or resistance measures and buildings designed to</p> |

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| | <p>withstand the hydrostatic forces from a breach.</p> <p>Take into account the conclusions with the Newham Surface Water Management Plan</p> |
| <p>Conclusion</p> | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk for the uses proposed. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> <p>It is also noted that part of the site has a current planning permission for comprehensive development that complies with the site allocation requirements and has been subject to a site specific flood risk assessment for that scheme. It is also noted that the wider reprofiling and landscaping works within the Queen Elizabeth Olympic Park parklands has reduced fluvial flood risk on sites within and downstream, including the Rick Roberts Way site.</p> |

Bromley-by-Bow

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| Site Allocation Reference | SA4.1 Bromley-by-Bow | | |
| Site Allocation Name And Location | Bromley-by Bow. Area of land with Bow Roundabout and River Lee to the north, River Lee to the east, Fenchurch Street Railway Line to the south and A12 to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | Flood Zones 1-3 (elements of site along northern and eastern edges within Flood Zones 2 and 3) | More Vulnerable | Sequential Test Required |
| Community Uses (inc. School and Library) | | More Vulnerable | Sequential Test Required |
| Retail | | Less Vulnerable | Appropriate |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



Sequential Test

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| Uses within the site allocation | Stage in Sequential Test | Assessment |
|--|---------------------------------|-------------------|

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| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is capable of delivering more than 500 new homes and is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Community Uses (School and Library) | Are there alternative sites available in Zone 1, 2 or 3? | <p>No. The Primary school is required to meet identified school place need (existing and from future planned development. The Ideas store is required to meet local need. Both have been previously identified and allocated within the LB Tower Hamlets Local Development Framework and alternative sites have not been available within the area that these would be required to serve.</p> |
| Conclusion: | <p>Although elements of the site fall within Flood Zones 2 and 3, the majority of the site area does not. An exceptions test is required in respect of the elements of development that may fall within those areas.</p> | |

| Exceptions Test | |
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| NPPF Requirement | Suggestions |
| <p>It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared.</p> | <p>The site provides the opportunity to provide a significant number of new homes and new employment uses on brownfield land that has previously been earmarked for redevelopment and regeneration in earlier adopted plans. The site capacity is also required to meet the London Plan housing target for the LLDC area and the housing target to 2031 within the Publication Local Plan of 14,711 new homes.</p> <p>The Primary school is required to meet the</p> |

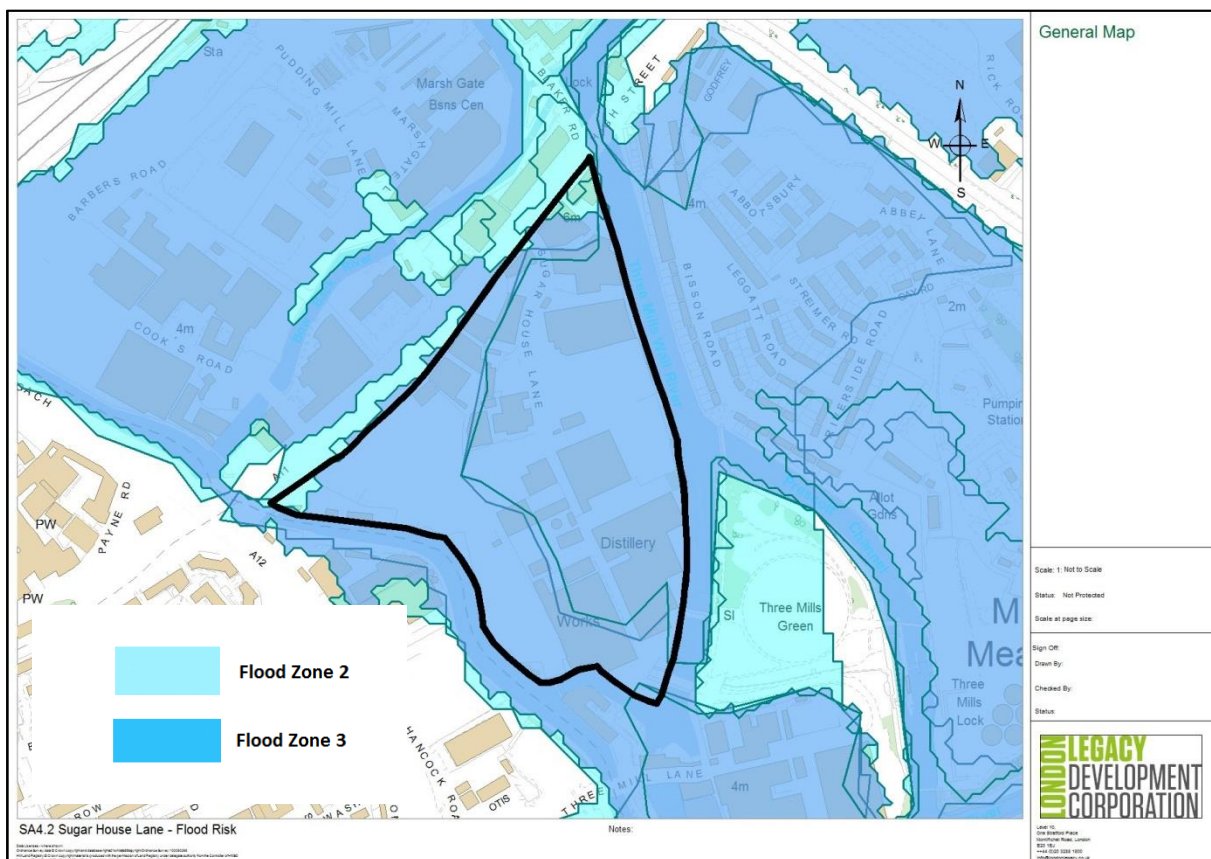
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| | <p>identified need for school places to address an existing deficit within LB Tower Hamlets and to serve surrounding new development in the future.</p> <p>The Ideas Store is required to provide for local community need, support lifelong learning and associated health and wellbeing of the community.</p> |
| <p>A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.</p> | <p>The LB Tower Hamlets SFRA 2 considers that the proposed development is unlikely to increase flood risk elsewhere. A site specific Flood Risk Assessment would be required to address this part of the Exceptions Test, and take into account any site recommendations from the level 2 SFRA. These include:</p> <ul style="list-style-type: none"> • More vulnerable uses are not located within Flood Zone 3, i.e. to the east and northern edges of the site. • The layout considers surface water flow routes and manage run-off on site sustainably to achieve Greenfield runoff rates. • Development within 1% AEP flood extent may require compensatory storage. • Development within Critical Drainage Area to follow guidance set out in TH SWMP • SUDS management scheme is put in place with 'at source' SUDS control measures to reduce existing site runoff • More vulnerable land uses are located within flood zone 1 and 2 • Floor levels of all residential uses be raised 300mm above flood level • Safe access/egress are taken into consideration for site uses and emergency services |
| <p>Conclusion</p> | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood</p> |

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| | <p>Risk Assessment that takes into account the site recommendations set out above.</p> <p>It is also noted that the northern part of the site has an extant planning permission for comprehensive development that complies with the site allocation requirements and has been subject to a site specific flood risk assessment for that scheme. The southern part of the site has also been subject to a planning permission for comprehensive development in accordance with the site allocation and been subject to site specific flood risk assessment, although that permission has now lapsed.</p> |
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Sugar House Lane

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| Site Allocation Reference | SA4.2 Sugar House Lane | | |
| Site Allocation Name And Location | Site to east and west of Sugar House Land, Stratford, bounded by Stratford High Street to the North, Three Mills Wall River to the east and River Lea to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | 2 and 3 | More Vulnerable | Sequential Test Required |
| Retail | | Less Vulnerable | Appropriate |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | Requires Sequential Test | | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--------------------------|------------|
| Uses within the site allocation | Stage in Sequential Test | Assessment |

| | | |
|----------------|---|---|
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Retail | Are there alternative sites available in Zone 1, 2 or 3? | No, the retail element is local in scale to serve the wider development and required given the scale of the development opportunity for other uses that the site represents. No other more local opportunity for provision of space to perform this function would be available. |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | No. The business space is required in order to continue elements of the business/economic role currently and previously performed by the site as a whole. Other available sites within the LLDC area are required for delivery of large scale residential and other use to meet housing targets, economic development need and provide for the accompanying range of supporting uses. |
| Conclusion: | With the majority of the site falling within Flood Zone 3 an Exceptions Test is required. | |

| Exceptions Test | |
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| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by | The site provides the opportunity to provide a significant number of new homes and employment uses on brownfield land that has |

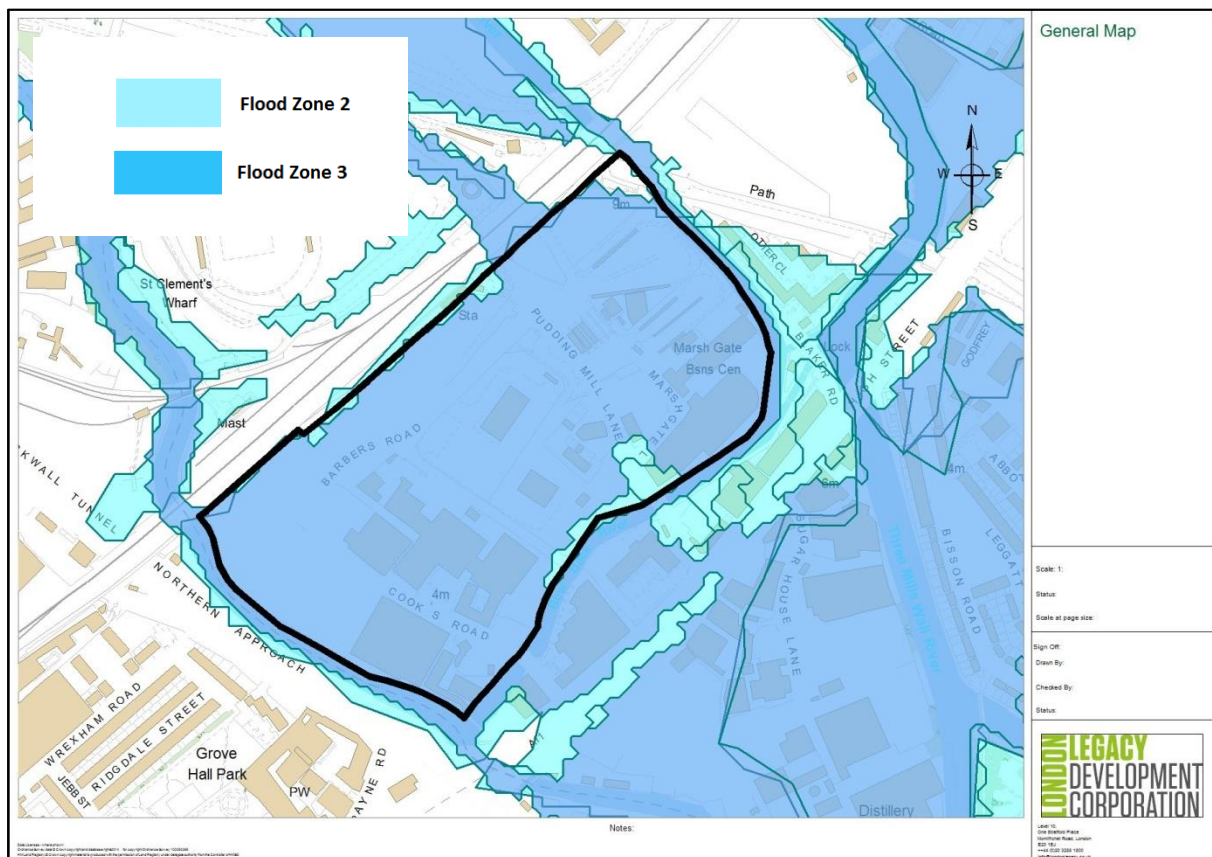
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| <p>an SFRA where one has been prepared.</p> | <p>previously been earmarked for redevelopment and regeneration. The site capacity is also required to meet the London Plan housing target for the LLDC area and the housing target to 2031 within the Publication Local Plan of 14,711.</p> |
| <p>A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.</p> | <p>The LB Newham SFRA considers that development of the area which includes this site would be unlikely to increase flood risk elsewhere. A site specific Flood Risk Assessment would be required for specific development proposals, taking into account the conclusions of the LB Newham SRFA and any subsequently updated flood risk information.</p> <p>These are likely to include:</p> <p>Adoption of a sequential approach to location of the most vulnerable elements of any scheme to higher ground within the site;</p> <p>Set back development from the watercourses;</p> <p>The finished floor levels in these areas should be above the 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Or</p> <p>'Less vulnerable' uses on ground floors within these areas with 'more vulnerable' uses above the maximum 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Where appropriate 'less vulnerable' uses on ground floors to incorporate flood resilience or resistance measures and buildings designed to withstand the hydrostatic forces from a breach.</p> <p>Take into account the conclusions with the Newham Surface Water Management Plan</p> |
| <p>Conclusion</p> | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an</p> |

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| | <p>appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations from the LB Newham SFRA.</p> <p>It is also noted that the site has a current planning permission for comprehensive development that complies with the site allocation requirements and has been subject to a site specific flood risk assessment for that scheme.</p> |
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pudding Mill

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| Site Allocation Reference | SA4.3 Pudding Mill Lane | | |
| Site Allocation Name And Location | Pudding Mill. Land bounded by Great Eastern Railway Lines to the north, Waterworks River to the east, Bow Back Rivers to the south and River Lea to the west. | | |
| Proposed Land Uses | Flood Zone | Vulnerability Classification | Vulnerability and Compatibility |
| Residential | 3 | More Vulnerable | Sequential Test Required |
| Community Uses | | More Vulnerable | Sequential Test Required |
| Retail | | Less Vulnerable | Appropriate |
| Business Space | | Less Vulnerable | Appropriate |
| Public Open Space | | Water Compatible | Appropriate |
| Conclusion | | Requires Sequential Test | |

Site Allocation Flood Risk Map



| Sequential Test | | |
|---------------------------------|--------------------------|------------|
| Uses within the site allocation | Stage in Sequential Test | Assessment |

| | | |
|----------------|--|---|
| Residential | Are there alternative sites available in Zone 1, 2 or 3? | <p>No, the Further Alterations to the London Plan 2014 identify a 10 year housing target for the LLDC area of 14,711 units. This is one of the sites that is required in order to meet the target and identified housing need.</p> <p>All identified sites within the LLDC area whether in flood zones 1, 2 or 3, are required in order to meet this target, with only very limited opportunity for windfall sites (both in terms of availability and housing numbers).</p> |
| Community Uses | Are there alternative sites available in Zone 1, 2 or 3? | No. The community use space is required to serve the proposed residential and business community proposed at Pudding Mill. |
| Retail | Are there alternative sites available in Zone 1, 2 or 3? | No, the retail element is local in scale and would form part of a Local Centre to serve the Pudding Mill site allocation and the areas surrounding it. No other more local opportunity for provision of space to perform this function would be available when taking into account sites in the wider area, which current have deliverable planning permissions for other mixes of use. |
| Business Space | Are there alternative sites available in Zone 3 with a lower risk of flooding? | No. The business space is required in order to continue elements of the business/economic role currently and previously performed by the site as a whole. Other available sites within the LLDC area are required for delivery of large scale residential and other use mixes to meet housing targets, economic development need and provide for the accompanying range of supporting uses. |
| Conclusion: | With the majority of the site falling within Flood Zone 3 an | |

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| | Exceptions Test is required. |
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| Exceptions Test | |
|--|--|
| NPPF Requirement | Suggestions |
| It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by an SFRA where one has been prepared. | The site provides the opportunity to provide a significant number of new homes and new employment uses on brownfield land that has previously been earmarked for redevelopment and regeneration in earlier adopted plans. The site capacity is also required to meet the London Plan housing target for the LLDC area and the housing target to 2031 within the Publication Local Plan of 14,711. |
| A site specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. | <p>The LB Newham SFRA did not consider this area in detail as a site allocation. However, detailed flood risk assessment has been carried out as part of the Legacy Communities Scheme outline planning permission which accounts for a significant proportion of the Pudding Mill area. This, along with the general information and conclusions from the LB Newham SRFA lead to a need for specific development proposals within the Pudding Mill site allocation to be accompanied by a site specific flood risk assessment, taking into account the conclusions of the LB Newham SRFA, the Legacy Communities Scheme FRA and any subsequently updated flood risk information.</p> <p>These are likely to include:</p> <p>Adoption of a sequential approach to location of the most vulnerable elements of any scheme to higher ground within the site;</p> <p>Set back development from the watercourses;</p> <p>The finished floor levels in these areas should be above the 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level, whichever level is higher at the time of assessment.</p> <p>Or</p> <p>'Less vulnerable' uses on ground floors within these areas with 'more vulnerable' uses above the maximum 1 in 100 year (1% AEP) plus climate change fluvial breach levels or the 1 in 200 (0.5% AEP) plus climate change tidal breach level,</p> |

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|-------------------|--|
| | <p>whichever level is higher at the time of assessment.</p> <p>Where appropriate 'less vulnerable' uses on ground floors to incorporate flood resilience or resistance measures and buildings designed to withstand the hydrostatic forces from a breach.</p> <p>Take into account the conclusions with the Newham Surface Water Management Plan</p> <p>Survey of existing river wall and flood defence structures where relevant to a site-specific proposal to determine the need for repair or improvement of the level of protection provided.</p> |
| <p>Conclusion</p> | <p>Based on the sequential and exceptions test it was concluded that no other site is reasonably available in a zone of lower flood risk. There is a reasonable prospect of compliance with the second part of the Exception Test subject to an appropriate site layout and a site specific Flood Risk Assessment that takes into account the site recommendations set out above.</p> <p>It is also noted that part of the site has a current planning permission for comprehensive development that complies with the site allocation requirements and has been subject to a site specific flood risk assessment for that scheme. It is also noted that the wider reprofiling and landscaping works within the Queen Elizabeth Olympic Park parklands has reduced fluvial flood risk on sites downstream, including Pudding Mill.</p> |