



BROAD LEVEL FLOOD RISK ASSESSMENT

**DEPOSIT LOCAL DEVELOPMENT PLAN
UP TO 2021**

October 2008

ASESIAD RISG LLIFOGYDD LEFEL EANG

**CYNLLUN ADNEUO DATBLYGU LLEOL
HYD AT 2021**

Hydref 2008



**CAERPHILLY COUNTY BOROUGH
LOCAL DEVELOPMENT PLAN
Up to 2021**

**BWRDEISTREF SIROL CAERFFILI
CYNLLUN DATBLYGU LLEOL
Hyd at 2021**

BACKGROUND PAPER 13 BROAD LEVEL FLOOD RISK ASSESSMENT

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**LDP DEPOSIT
October 2008**

***CDL ADNEUO*
Hydref 2008**

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Contents	Page
1 Introduction	13.2
2 Policy Context	13.2
2.1 Planning Policy Wales (2002)	13.2
2.2 Technical Advice Note 15: Development and Flood Risk (2004)	13.2
2.3 Environment Agency – Managing Flood Risk: Eastern Valleys CFMP	13.5
3 Action through the C.C.B.C. Local Development Plan	13.6
3.1 Introduction	13.6
3.2 Site Assessment Procedure	13.6
3.3 Environment Agency Consultations	13.8
3.4 Dwr Cymru Welsh Water Consultation	13.8
3.5 Land Drainage Consultation	13.9
4 Consideration of Flood Risk by Proposed Land Use	13.10
4.1 Housing sites	13.10
4.2 Housing sites with planning consent	13.10
4.3 Housing sites without planning consent	13.11
4.4 Supply of land for housing	13.13
4.5 Community Facilities	13.14
4.6 Employment	13.15
4.7 Commercial Development	13.16
4.8 Leisure Facilities	13.17
4.9 Transport Infrastructure	13.17
4.10 Conclusions	13.18
Appendices	
1 Settlements with potential flood risk issues	13.19
2 Summary of current fluvial flood risk	13.21
3 Existing flood risk information	13.22

1. Introduction

- 1.1 The Planning and Compensation Act 2005 requires the Council to prepare a Local Development Plan (LDP) for the County Borough. The LDP will provide the policy framework for future development proposals, including the allocation and protection of land for a range of uses.
- 1.2 Flooding is an important factor that influences both development control decisions and development plan allocations. The natural process of flooding is often hard to predict, and although flooding events are infrequent within the County Borough, flooding can threaten human life as well as cause extensive damage to property, general disarray and trauma for those affected.
- 1.3 Flood risk is therefore a key issue for the forthcoming LDP to address. This paper forms a Broad Level Assessment identifying the national policy context for flood risk and how the precautionary principle advocated in national planning guidance to avoid development in the flood plain has been embraced in the LDP site selection process. The paper identifies the wealth of information the Council has on a site-specific basis identifying where the consequences of flooding can be managed as well as setting out the justification for the inclusion of a small number of sites within flood risk areas.

2. Policy Context

2.1 Planning Policy Wales (2002)

- 2.1.1 In exercising its functions, the Council has a duty to promote sustainable development. The LDP has a key role to play in the delivery of this by identifying land for homes, infrastructure, employment and services in a way that is consistent with sustainable development principles (Section 2.2 Planning Policy Wales).
- 2.1.2 Planning Policy Wales advises that planning authorities should adopt a precautionary approach in the determination of planning applications and the formulation of planning policies with regard to development and flood risk (Paragraph 13.2.3). The guidance requires positive avoidance of development in areas defined as being of flood hazard, rather than reliance upon flood defence. A sustainable approach to development is therefore stated to involve the *“avoidance of development in flood hazard areas.”*

2.2 Technical Advice Note 15: Development and Flood Risk (2004)

- 2.2.1 Managing flooding is an important part of contributing towards achieving sustainable development. Technical Advice Note 15: Development and Flood Risk (July 2004) *“provides technical guidance which supplements the policy set out in Planning Policy Wales in relation to development and flooding. It advises on development and flood risk as this relates to sustainability principles and provides a framework within which risks arising from both river and coastal flooding, and from additional run-off from development in any location, can be assessed.”*

2.2.2 The general approach of the TAN is to advise caution with regard to new development in areas at high risk of flooding by setting out a precautionary framework to guide planning decisions. The aims are to:

- Direct new development away from those areas which are at high risk of flooding
- Where development has to be considered in high risk areas (zone C) only those developments that can be justified on the basis of the tests set out in the TAN should be located in these areas.

2.2.3 The TAN provides development advice maps identifying zones within the flood plain most at risk of flooding, as shown in Figure 1:

Description of Zone		Use within the precautionary framework
Considered to be at little or no risk of fluvial or tidal/coastal flooding	A	Used to indicate that justification test is not applicable and no need to consider flood risk further.
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B	Used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further.
Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal)	C	Used to indicate that flooding issues should be considered as an integral part of decision-making by the application of the justification test including assessment of consequences.
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1	Used to indicate that development can take place subject to application of justification test, including acceptability of consequences.
Areas of the floodplain without significant flood defence infrastructure.	C2	Used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered.

Figure 1 –Flood Zones (TAN 15, 2004)

2.2.4 The TAN also categorises land uses with regard to their vulnerability, as defined in the table below.

Development Category	Types
Emergency Services	hospital, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in times of flood
Highly vulnerable development	all residential premises (including hotels and caravan parks), public buildings (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites
Less vulnerable development	General industrial, employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites

Figure 2 –Development Categories (TAN 15, 2004)

2.2.5 On the basis of TAN 15 flood maps it is advised that highly vulnerable development and emergency services should not be permitted with zone C2. All other new development within zones C1 and C2 should only be permitted where it can be justified in that location. In justifying the proposed development, it should be demonstrated that:

- Its location in zone C is necessary to assist, or be part of, a local authority regeneration initiative or a local authority strategy required to sustain an existing settlement; or,
- Its location in zone C is necessary to contribute to key employment objectives supported by the local authority, and other key partners, to sustain an existing settlement or region;

And

- It concurs with the aims of PPW and meets the definition of previously developed land (PPW fig 2.1); and,
- The potential consequences of a flooding event for the particular type of development have been considered, and are found to be acceptable.

2.2.6 An explanation of how the guidance contained in TAN 15, and in particular, the precautionary approach, has been incorporated within the preparation of the Caerphilly Local Development Plan is discussed in greater detail within the next section.

2.3 Environment Agency Wales - Managing Flood Risk: Eastern Valleys Catchment Flood Management Plan

- 2.3.1 As part of the delivery of future flood risk management outcomes, Catchment Flood Management Plans (CFMPs) are currently being prepared for river catchments across England and Wales. Once finalised, the CFMP will be a high level strategic planning tool, which will set out the policies to manage flood risk in each catchment area for the next 50 to 100 years.
- 2.3.2 The CFMP provides the overall framework within which more detailed assessments of flood risk can be undertaken, such as strategy plans and strategic flood consequence/risk assessments. It is regarded to be the first 'tier' in the strategic flood risk management process.
- 2.3.3 Caerphilly County Borough lies within the Eastern Valleys catchment area, which comprises three major rivers, the Rhymney, Sirhowy and the Ebbw and their major tributaries, across the local authority areas of Cardiff, Newport, Blaenau Gwent and Caerphilly.
- 2.3.4 An inception report has been prepared as part of the Catchment Flood Management Plan (CFMP) for the Eastern Valleys (September 2006). This report highlights the initial understanding of this catchment area, including physical characteristics and known flood risk and flood warning areas in the catchment. It also provides information on new data that has been collected as part of this process.
- 2.3.5 In addition, a draft scoping report has also been produced (August 2007) which assesses the current flood risk from all sources (i.e. rivers, sewers, groundwater and surface water) within the catchment, by understanding the likelihood and consequences of flooding and how this risk is managed now. The report also develops future scenarios to examine how flood risk will change over time and provides the scope of the work for the development of the final plan.
- 2.3.6 The inception and scoping reports contribute to the evidence base of flood risk, particularly with regard to those areas considered most at risk of flooding, and alongside TAN 15, has been taken into account in the preparation of the LDP.
- 2.3.7 The risk of flooding in certain settlements is of particular relevance to site-specific allocations and policies within the LDP and therefore the data in the CFMP has been considered. Appendix 1 identifies a list of settlements with potential flood risk issues in the Ebbw and Rhymney catchments as they relate to Caerphilly County Borough and Appendix 2 summarises the current fluvial flood risk in Eastern Valleys from a 1% (1 in 100) annual chance event under current catchment conditions.
- 2.3.8 The next section of the report identifies how TAN 15, previous correspondence with the Environment Agency and other relevant information on flood risk areas has been utilised in the consideration of sites for inclusion within the LDP.

3. Action through the Caerphilly County Borough Local Development Plan

3.1 Introduction

- 3.1.1 There are zone C flood designations continuously along the three main river corridors of the Rivers Rhymney, Ebbw and Sirhowy, and the tributaries of Porset Brook, Nant Cylla, Nant Bargoed Rhymni and Nant Yr Aber, which meet the River Rhymney, and the Nant Carn and Nant Gwyddon, which join the Ebbw. It has been calculated that 1% of the total area of the County Borough is covered by a C1 Flood Risk designation (often overlapping with zone C2), 7.5% by zone C2 and a further 2% within zone B.
- 3.1.2 Given the topography of the area and the way in which rapid urbanisation took place in the nineteenth century, a significant amount of urban development in the County Borough has taken place alongside rivers, within the river corridor and often on the flood plain. It is therefore inevitable, despite the overall aim to avoid flood risk areas, that some existing development will be vulnerable to flooding.
- 3.1.3 As a general principle the LDP development strategy seeks to locate development away from the floodplain in compliance with TAN 15. One of the key objectives of the LDP is to *"reduce the impact of flooding by ensuring that highly vulnerable development is directed away from areas of risk wherever possible."*
- 3.1.4 However, some flexibility is necessary to enable the risks of flooding to be addressed whilst recognising the negative economic and social consequences of precluding investment in existing urban areas, and the benefits of re-using previously developed land. In assessing the suitability of previously developed land for new development a judgement has been made in terms of the social and economic benefits of redeveloping specific sites and the likely environmental impact of redevelopment including effects on biodiversity.
- 3.1.5 Where development is considered appropriate and can be justified within the context of TAN 15, suitable mitigation measures will need to be incorporated within the design of any new development to ensure that it is as safe as possible from flooding. Wherever possible in such locations redevelopment will also be planned in such a way as to provide increased protection for existing vulnerable urban areas.

3.2 Site Assessment Procedure

- 3.2.1 As part of the early stages of plan preparation, the Council invited all landowners with an interest in the County Borough to submit details of their land for consideration for inclusion in the Caerphilly County Borough Local Development Plan. The sites submitted as part of this process are referred to as candidate sites.
- 3.2.2 In order to ensure that land identified in the LDP is capable of development and can contribute to the delivery of the Development Strategy, candidate sites have undergone stringent assessment to determine their suitability for further consideration as part of the LDP process.

- 3.2.3 All sites with a capacity of 10 or more dwellings, as determined using a capacity of 35 units a hectare, have been subject to an Initial Planning Assessment which has determined whether a site was considered suitable in planning terms for the proposed use identified by the landowner, or whether an alternative use would be more appropriate. Candidate sites that were regarded as unsuitable for any major land use were deemed to have failed the Initial Planning Assessment and were not considered suitable for further consideration as part of the LDP process. No further assessment has therefore been undertaken.
- 3.2.4 In line with the guidance contained in TAN 15 the Council has adopted the precautionary principle when considering sites for inclusion in the Plan. Steps have therefore been taken to positively target development away from the flood plain in the first instance. As part of the Initial Planning Assessment, an appraisal of each site to determine its designation with regard to Flood Risk has been undertaken. Sites that fell either completely within a Zone C Flood Risk area, or where zone C2 was the predominate zoning, were ruled out from further consideration at this stage unless:
- The candidate site had the benefit of planning consent, as this would warrant further assessment as the principle of development has been established on the site.
 - Part of the site would fall outside of a Zone C flood risk area and there was sufficient land available to provide a comprehensive development of over 10 dwellings. This is in accordance with paragraph 11.1 on TAN 15, which states that where a site falls partially within Zone C it will be a matter for the planning authority to judge whether to apply the justification test.
 - The site was located on previously developed land and further consideration would be required to determine whether the site was necessary in sustaining an existing settlement or contributing to key employment objectives (as identified by paragraph 6.2 of TAN 15)
 - The planning preferred use for the site was leisure or open space as this would be compatible with TAN 15.
- 3.2.5 A total of 578 candidate sites have been assessed, with 65 of these either predominately or completely located within a Zone C flood risk area. As a result of the Initial Planning Assessment, 56 of the 65 sites within Zone C were not taken forward for further consideration. The remaining 9 sites were subject to further detailed assessments on the grounds that they addressed one or more of the criteria listed above.
- 3.2.6 All sites that satisfied the Initial Planning Assessment were subject to detailed expert assessment undertaken by a wide range of experts in relation Countryside and Landscape, Highways and Environmental Health. These assessments were based on the preferred land use identified as a result of the initial assessment.
- 3.2.7 Sites that satisfied the criteria set out in the expert assessments were then assessed against the 8 component parts of the development strategy, with those meeting the most criteria in each area going forward for potential inclusion within the LDP, subject to consultation with statutory undertakers including the Countryside Council for Wales (CCW), Dwr Cymru Welsh Water (DCWW) and the Environment Agency (EA) as well as further internal consultation.

3.3 Environment Agency Consultation

3.3.1 The comments of the EA have been a fundamental part of the site selection process. The Environment Agency were consulted on all potential housing sites or mixed-use sites which contained an element of housing that did not have the benefit of planning consent. As a result of this consultation stage, the EA raised objections to housing sites within Zone C. As a consequence of the consultation, one site was removed from further consideration:

- Land south of Chapel Farm Terrace, Cwmcarn (Mixed Use – Housing and Employment)

3.3.2 This consultation also raised site-specific issues with regards to potential contamination and biodiversity, although those issues have been considered separately as part of the expert assessments undertaken by the Council's Environmental Health officers and Ecologists respectively.

3.3.3 A further consultation was held with the EA on the first draft of this Broad Level Assessment, where all land uses within zone C were highlighted. As a direct result of this second consultation, five other proposed allocations have been discounted on flood risk grounds – four housing sites and a proposed cemetery extension.

- Land North of Glanyafon, Ford Road, Pengam (Housing)
- Commercial Street and Mill Street, Risca (Housing)
- Concrete Yard, Deri (Housing)
- Land off Penallta Road, Ystrad Mynach (Housing)
- Land south of Bedwas Cemetery (Cemetery Extension)

3.3.4 Three of the four housing sites have had the benefit of past planning consent for housing, where the principle of residential development on the sites has been established. However, in light of the introduction of the TAN 15 flood maps, where flooding is recognised as a major constraint it has not been deemed appropriate to allocate the land, but the sites will remain within the settlement boundary to allow them to come forward for development should it be demonstrated as a result of a future FCA that development would be acceptable in line with the TAN 15 tests.

3.3.5 As a result of the consultation with the EA it was resolved to undertake further work in the form of Strategic Flood Consequences Assessments on two housing sites, which are discussed in more detail in Section 4.

3.4 Dwr Cymru Welsh Water Consultation

3.4.1 In addition to the consultation with the EA with regards to flooding, DCWW have been consulted on all new sites for housing and employment to ascertain whether a water supply could be made available to the site and whether foul water infrastructure was in place. In the few instances where advice has been given that the allocation of land would lead potential foul sewerage overloading, it will be noted

within the Appendix of the LDP that developers will be required to fund any necessary improvements if development is proposed in advance of any regulatory improvement as requested by DCWW. Where sites have planning consent, DCWW have been consulted as part of the planning application process and planning permission has only been granted where DCWW raised no objections.

3.5 Land Drainage Consultation

- 3.5.1 The Council's Land Drainage section have been consulted on localised flooding issues and the position of culverts and watercourses in proximity of new housing sites. Where constraints are present, these will be identified in the Appendix of the LDP. Where the level of constraint would preclude development, sites have not been taken forward for further consideration.
- 3.5.2 The need for a culvert locational survey on sites where culverts are present has been identified in the LDP Appendix.

4. Consideration of Flood Risk by Proposed Land Use

4.1 Housing Sites

- 4.1.1 Housing is defined by TAN 15 as highly vulnerable development, which should not be located within zone C2 of the flood plain. However, a small number of proposed housing allocations lie partially within zone C2. This section seeks to explain the rationale behind these potential allocations, first examining those potential housing sites that had planning consent but were undeveloped as of the base date of the last completed Joint Housing Land Availability Study dated 1st April 2007, followed by sites without planning consent as of this date.

4.2 Housing sites with planning consent

- 4.2.1 Since the LDP candidate site procedure began in late 2005, a number of sites submitted as part of this assessment process have subsequently been granted planning consent for housing, (in some cases subject to the signing of a Section 106 agreement). In addition to those sites submitted as candidate sites, the existing housing land supply has been examined, with housing sites that had a valid planning consent as of 1st April 2007 (being taken forward as potential housing allocations. A total of 39 sites had planning consent (6 of which were subject to the signing of a Section 106 Agreement). Of the 39 sites, 10 of them lie either partially or completely within a C1 and/or C2 flood risk area. In the case of 3 of the 10 sites, the area within zone C equated to 10% or less of the total area of the site and is therefore not considered that the risk of flooding was significant enough to preclude development.
- 4.2.2 In addition, planning applications on 2 further potential housing sites have been submitted at the Suflex factory in Risca-Pontymister (07/0447/FULL) and Land at Venosa Trading Estate in Caerphilly. The Environment Agency has been consulted in relation to these applications and no objections were raised.
- 4.2.3 As identified in TAN 15, the susceptibility of land to flooding is a material consideration in the determination of planning applications. It is therefore the case that the potential consequences of flooding have been considered as part of the planning process in order to determine whether these consequences can be managed at a level that is acceptable for the nature and type of development being proposed. In considering the risk of flooding on the sites in question, the local authority has considered the comments made by the Environment Agency in the determination of planning applications. Planning permission has only been granted on sites where the local authority and the Environment Agency are satisfied that the assessment of flood consequences is acceptable. A summary of the comments made by the Environment Agency in response to these planning applications is listed in the Appendix.
- 4.2.4 TAN 15 states that it is reasonable for planning authorities to require all development permitted in zone C to plan for the consequences of flooding, including those already granted outline permission or where renewal of planning consent is sought. However, as of the base date of 1st April 2007, all of the sites with planning consent had been approved since TAN 15 was published in July 2004 and therefore account would have been taken of the latest national planning guidance on flooding. It is noted that the development advice maps set out in TAN 15 are subject to future change as a result of new information. However, as each of these housing sites were

considered to be acceptable as of the base date by virtue of their valid planning consent, it is considered that future applications on these sites should be addressed through the development control system rather than through the Local Development Plan. The requirement to undertake future flood consequences assessments on individual sites will be explicitly stated in the site-specific requirements as set out in the Appendix of the Local Development Plan should subsequent applications be submitted on any of the sites that already have planning consent.

4.3 Housing sites without planning consent

4.3.1 There are only two sites of the 578 submitted for consideration through the candidate sites process that are to be taken forward as housing allocations in the Deposit Local Development Plan that lie partially or completely within C1/C2 and do not have a current planning consent. These are:

- Navigation Colliery, Crumlin
- St Ilans Comprehensive, Caerphilly

4.3.3 These two sites received EA objections in earlier correspondence regarding potential housing sites, until such time as a Broad Level Assessment and Strategic Flood Consequences Assessment were undertaken and submitted to the EA for consideration. This paper forms the Broad Level Assessment for how Caerphilly has adopted the precautionary principle in the preparation of the Deposit LDP and the justification for the small number of housing sites being allocated on land partially within C1 or C2 zones.

4.3.4 Test of Soundness CE2 refers to the need for a robust and credible evidence base upon which the strategy, policies and allocations are based, having considered alternatives. It can be demonstrated that the potential allocations for housing are based on robust evidence as sites have been subject to stringent assessment tests and alternatives considered. Sites within zone C of the flood plain have only been taken forward where no more suitable alternative sites are available and there would be significant social and economic benefits gained from the allocation of the land.

4.3.5 One of the components of the LDP Strategy is to target development to reflect the role and function of individual settlements. A hierarchy of 5 principal towns (Caerphilly, Blackwood, Bargoed, Risca-Pontymister and Ystrad Mynach) and 4 key settlements (Newbridge, Bedwas, Nelson and Rhymney) is set out in the Strategy, with all other areas being identified as having a residential role.

4.3.6 Many of the former mining villages across the County Borough have a limited range of housing stock, dominated by large numbers of terraced properties. Whilst the candidate sites process promotes the consideration of a range of sites in a variety of settlements in order to diversify the housing stock, the topography of the valleys and site constraints have significantly impacted on the number of sites deemed acceptable for further consideration. Consequently, the opportunity to develop sites in some settlements is limited to the redevelopment of existing brownfield sites. In some cases the only sites available to help sustain local communities by the provision of housing are in the floodplain. This is the case in Crumlin where Navigation Colliery, which lies partially within a flood risk area, is being taken forward as an allocation.

- 4.3.7 It is noted in TAN 15 (paragraph 6.2) that only less vulnerable development can be justified within zone C where it is required as part of a regeneration initiative or to sustain an existing settlement, but highly vulnerable development such as housing should not be permitted. However, Crumlin is identified in the Strategy as having a residential role and therefore an expansion of range of houses in order to support the community would be considered more compatible with the aims of the strategy and adjoining sites than other uses that may be less vulnerable. Housing, as a use with the highest land value, offers the greatest opportunity for the promotion of a viable regeneration scheme. This is a particular issue in Crumlin, where the site is constrained by the need to restore the listed former colliery buildings on the site.
- 4.3.8 Furthermore, the EA have identified the site as one that may be potentially contaminated due to the historic use of the land and its allocation for housing will facilitate its reclamation, which may have wider benefits for water quality.
- 4.3.9 In assessing flood risk, it is also important to recognise that Crumlin has not been identified as a settlement with flood risk issues in the CFMP inception report (Appendix 1), nor has it been identified that any people, property or infrastructure is at risk in the settlement.
- 4.3.10 Whilst there are clear social, economic and environmental reasons for the allocation of Navigation Colliery, it is also necessary to demonstrate, as required by TAN 15, that the potential consequences of a flooding event for this type of development have been considered and found to be acceptable. In order to address this, the Council have commissioned a Strategic Flood Consequences Assessment to be undertaken in accordance with the requirements of TAN 15, which forms part of the evidence base for the LDP.
- 4.3.11 With regards to the second site, St Ilan's Comprehensive in Caerphilly, the allocation for a mixed use development of housing and education facilities (both highly vulnerable development) can be justified on the grounds that the site is classified as previously developed land and its redevelopment will contribute to the regeneration of a vacant site in a prominent location to the north of Caerphilly town centre, contributing to the need for both market and affordable housing and improving the educational facilities in the area.
- 4.3.12 As Caerphilly is a Principal Town, a development of this nature would reflect the Strategy aim of a balanced approach to future growth and by promoting brownfield sites within the town centre, it will reduce the need to develop greenfield sites in the Caerphilly Basin, which is a fundamental aim of the plan. It should also be noted that as the C2 flood zone again relates mainly to the eastern part of the site only, a sensitive design could seek to minimise flood risk. As the site is located predominately in a residential area it is considered that some types of less vulnerable development would be inappropriate and, as is the case with the site in Crumlin, a higher land value is required to facilitate the redevelopment of the site.
- 4.3.13 A flood modelling exercise leading to a Flood Consequences Assessment has been undertaken to support the site's allocation in the LDP and will accompany the future submission of a planning application on the site.

4.4 Supply of Land for Housing

- 4.4.1 It can be demonstrated that even if some or all of the sites located within zone C were not developed due to TAN 15, there would still be enough land allocated to meet the County Borough's housing requirements.
- 4.4.2 The Caerphilly LDP seeks to allocate 8,625 dwellings over the plan period 2006-2021 in order to meet projected housing requirements. However, in order to allow for choice and flexibility, 1,788 additional dwellings have been allocated across the County Borough over and above the 8,625 dwelling requirement equating to a total land allocation of 10,403 units.
- 4.4.2 Of the 10 sites located within zone C of the flood plain with current planning consent, 2 were under construction as of 1st April 2007. These were Jeremy Oils in Llanbradach and Land West of the A467 and the Afon Ebbw in Abercarn. A total of 314 units had not been started on these two sites as of the base date. As the sites are under construction, it is not anticipated that any future applications would be submitted on these sites on which the EA view would change and therefore it is assumed that these figures can be discounted from the total number of units on which the EA may raise future objections.
- 4.4.3 The remaining 8 sites with planning consent, or consent subject to the signing of a S106, are listed below:

Site Name	Settlement	No. Units
Eastern part of land adjacent to River Ebbw	Risca	48
Waterloo Works	Waterloo	545
Gas Works Site, Mill Road	Caerphilly	55
Tyn y Waun Farm	Machen	10
Old Barrel Store	Rhymney	15
		673

- 4.4.4 As a result of the information submitted to the EA as part of these planning applications, no objections were raised regarding the proposals at planning application stage, although some applications were granted subject to conditions regarding flood risk. If, however, there was a fundamental objection to development in the future as a result of any new or renewed applications on one or more of these sites, potentially 673 units could be undevelopable. This would represent the worst-case scenario and is likely only to occur if flood risk maps change significantly in the future.
- 4.4.5 In terms of sites without planning permission, if development were precluded on all four sites below as a result of TAN 15 advice, a total of 345 allocated units would be unavailable for development, although it should be noted that only part of each of these two sites actually lies within zone C.

Site Name	Settlement	No. Units
St Ilans Comprehensive	Caerphilly	200
Navigation Colliery	Crumlin	145
		345

- 4.4.6 In total, in a worst case scenario where development was precluded in the future due to flood risk on all sites with current planning consent and all new allocations, a total of 1,018 units may be undevelopable. This is still significantly lower than the over-allocation of 1,778 dwellings, resulting in sufficient land still being available for housing even if these few sites do not go ahead. However, if this situation were to occur there would be significant negative consequences as regeneration would be limited to those settlements unaffected by potential flood risk and would undermine the LDP development strategy aim of having a balanced approach to growth.

4.5 Community Facilities

- 4.5.1 For the purposes of the Local Development Plan, community facilities are considered to include schools, hospitals, libraries and emergency service stations, all of which are classified as highly vulnerable uses in TAN 15.
- 4.5.2 The provision of a range of community facilities to serve local needs is an important means of enhancing the quality of life for residents and sustaining communities. It is a key objective of the LDP to “protect and provide a wide range of community facilities which are appropriately located and easily accessible, and which meet the needs of all sections of the population.”
- 4.5.3 Whilst every effort has been made to locate such uses outside of the flood plain, it is important that community facilities are well related to the communities they are serving and offer in some cases the opportunity to bring previously developed land or buildings back into beneficial community use.
- 4.5.4 It is proposed that in order to help regenerate communities and improve the well-being of residents in the County Borough as a whole, several allocations for community facilities can only be achieved if suitable land is allocated either partially or wholly within zone C flood risk areas. These are:
- A new Local General Hospital at Ystrad Mynach
 - Two new school sites at the former Waterloo Works near Machen and St Ilan’s Comprehensive in Caerphilly
 - A library at the former Palace Cinema in Risca
- 4.5.5 The new hospital, the library at the former Palace Cinema and the new school at Waterloo have the benefit of planning consent (in the case of Waterloo subject to the signing of the S106 agreement). The Environment Agency has agreed in all three cases that, as a result of Flood Consequences Assessments, flooding can be acceptably managed.

- 4.5.6 The justification for the proposed mixed-use allocation at St Illans Comprehensive is explained in the previous section and it is noted that the Council is currently in discussions with the Environment Agency with regard to flood risk at the site.

4.6 Employment

- 4.6.1 Under TAN 15 definitions, the use of land for employment or general industry is regarded to be less vulnerable development and will only be permitted within zones C1 and C2 where it can be justified. Whilst it is noted that 18 of the 36 existing protected employment sites lie partially or completely within zone C, these sites have already been developed and therefore it is only appropriate to examine those new employment allocations located within zone C if the flood plain, which are:

- Duffryn Business Park North, Ystrad Mynach
- Duffryn Business Park, Ystrad Mynach
- Gateway site, Newbridge

- 4.6.2 The two sites at Duffryn Business Park are proposed extensions to an existing employment site. The whole site, including the two undeveloped areas, was granted planning permission dated 17th February 1969. This consent has been implemented by virtue of the construction of a number of units on the industrial estate and therefore it is considered that the site has an extant planning consent. The requirement to undertake an acceptable Flood Consequences Assessment as part of any future application will be identified in the Appendix to the Deposit LDP.

- 4.6.3 The proposed extensions to Duffryn are crucial to the delivery of a range of employment sites in order to meet the LDP objective to “provide and protect a diverse portfolio of employment land for a variety of employment uses, focusing in particular on higher value employment opportunities and sites to meet local need.”

- 4.6.4 An employment site appraisal has been undertaken by consultants to determine the suitability of the existing employment land supply to meet future needs. A finding of this study was that Duffryn Industrial Estate scored well as a site to be retained for employment use, being identified as one of the key sites required to meet forecast industrial and business needs. As such, the two extensions will contribute to the key employment objectives as part of TAN 15, as well as meeting the wider LDP objectives of providing a balanced range of sites, which are targeted to reflect the role and function of an area. The promotion of further employment uses in the principal town of Ystrad Mynach is complementary to the role and function of the area. It is therefore appropriate for these sites to be allocated rather than an alternative location.

- 4.6.5 It is important to note that the sites extending Duffryn Business Park only fall partially within zone C with 50% of the northern extension falling within zone C1 and 75% of the southern extension falling within zone C1/C2. However, in response to comments made by the Environment Agency it is necessary to demonstrate, as required by TAN 15, that the potential consequences of a flooding event for this type of development have been considered and found to be acceptable. In order to address this, the Council have commissioned a Flood Consequences Assessment to be undertaken in accordance with the requirements of TAN 15, which will form part of the evidence base for the LDP.

- 4.6.6 The proposed office site at the Gateway site in Newbridge is again only covered partially by a flood risk designation (only 30% in zone C2). The site has been subject to a past planning consent for a mixed-use development, although the original proposal for this part of the site (a fast food unit) has not been implemented. Further consultation with the EA on the initial draft of the BLA indicated that the EA were satisfied that the site lies outside the 1 in 1000-year event boundary. As such, no further work is required to be undertaken.
- 4.6.7 The proposal can be justified on the grounds that Newbridge is a key settlement as identified in the LDP Strategy and this proposal will relate well to its role and function. Such a proposal will help sustain the community and regenerate an underused area of land in a prominent position at the entrance to the town. Furthermore, this site offers one of the only opportunities within close proximity to the town centre and railway station and is well related to the new build office development recently completed to the north west. The requirement to undertake a Flood Consequences Assessment as part of any future application will be identified in the Appendix to the Deposit LDP.

4.7 Commercial Development

- 4.7.1 Retail use is also classified as less vulnerable development. The historical development of town centres alongside rivers has resulted in three of the five principal town centres, as defined by town centre boundaries, lying within zone C flood risk areas. These centres are Caerphilly, Risca-Pontymister and Ystrad Mynach. In addition to these, Crossways Retail Park on the outskirts of Caerphilly also lies within zone C.
- 4.7.2 National retail planning policy as set out in Ministerial Interim Planning Policy Statement (MIPPS) 02/2005: Planning for Retailing and Town Centres identifies that new retailing provision should be located in proximity to other commercial businesses, with town, district, local and village centres being identified as the best locations for this type of development. New proposals will help to sustain and enhance the vitality and viability of the existing town centres and can offer the opportunity to bring back into beneficial use redundant buildings and under-utilised land.
- 4.7.3 The MIPPS highlights that the sequential approach should be adopted in the selection of sites for allocation within the development plan with the first preference being for retail uses to be located within defined town centres. The proposed allocation of land for commercial use in the LDP is in accordance with this guidance. However, two of the sites identified for retail use fall within zone C of the floodplain.
- Adjacent to Lidl, Pontymister – retail
 - Former Palace Cinema, Risca – retail
- 4.7.4 Both sites have valid planning consents with the risk of flooding having been found to be acceptable, and both are located on previously developed land. In addition, both sites have the potential to help sustain Risca-Pontymister town centre by diversifying the retail offering as well as the provision of jobs. These proposals are in accordance with the justification test defined by TAN 15.

- 4.7.5 In addition, whilst not within a defined town centre boundary, the redevelopment of an existing retail site at Crossways Retail Park on the outskirts of Caerphilly is also promoted as a potential allocation within the LDP. Although the site lies within a C2 flood risk area, the consequences of flooding have been found by the EA to be acceptable and the site has a valid planning consent. This redevelopment will help secure the future viability of this retail park through the reuse of previously developed land and will help to sustain employment opportunities within Caerphilly town. The proposal can therefore be justified as also meeting the requirements of TAN 15.

4.8 Leisure Facilities

- 4.8.1 TAN 15 advises that “*proposals for public open space, outdoor recreational uses and agricultural developments are likely to be acceptable in all areas where there is a risk of flooding.*” (Paragraph 11.21)
- 4.8.2 In trying to promote the most acceptable land use within flood plains, the LDP seeks to continue to promote the flood plain for leisure and open space in order to protect these areas from more vulnerable development wherever possible.

4.9 Transport Infrastructure

- 4.9.1 Transport infrastructure is classified as less vulnerable development under the TAN 15 classification and therefore would be permitted within a zone C flood risk area where it can be justified that its location in zone C is necessary to assist or be part of a local authority regeneration initiative or strategy required to sustain an existing community as well as being located on previously developed land and the consequences of flooding having been considered and found to be acceptable.
- 4.9.2 The Deposit LDP is likely to include two proposals for highways improvements that lie within zone C flood risk areas:
- Improvements to the Crumlin junction of the A472
 - Improvements to the roundabout at the A468 Bedwas Bridge
- 4.9.3 In recent years there has been significant increase in congestion within the Northern and Southern LDP strategy areas. One of the key objectives of the LDP is to reduce congestion by minimising the need to travel, promoting more sustainable modes of transport and making the most efficient use of existing transport infrastructure. As a result, development in these strategy areas will be required to contribute towards necessary infrastructure improvements.
- 4.9.4 The two transport infrastructure projects highlighted within zone C are improvements to existing junctions that are crucial in making the most efficient use of the strategic transport network. By their nature, it would not be possible for these improvements to occur in areas outside of zone C as the road infrastructure is already in place. By improving the flow of traffic in particular areas there is the potential to significantly improve the quality of life for residents and sustain communities by ensuring access can be obtained along the strategic highways network to jobs and services.

- 4.9.5 Both proposals are for improvements to the road infrastructure in place, rather than new road development and, as such, the impact of small-scale improvements on the risk of flooding is likely to be minimal, with the significant benefits gained from the improvements put in place outweighing the minimal risk. There will be a requirement in accordance with TAN 15 for a flood consequences assessment to be undertaken, although due to the minimal impact of the development it would be more appropriate for this to be undertaken at planning application stage as the timescale for these improvements to be undertaken will depend on the timing of other allocations coming forward since these will facilitate the necessary funding for such improvements.

4.10 Conclusions

- 4.10.1 This paper highlights that the requirements of TAN 15 have played a fundamental role in the selection of sites for inclusion in the LDP, with a large number of sites not being taken forward for further consideration due to flood risk issue. Where a small number of sites within the flood plain are being taken forward it is only where this is in accordance with the LDP Strategy insofar as it is necessary to sustain existing settlements and no alternative sites outside of the flood plain are realistically available.
- 4.10.2 It will be noted from the paper that most sites have already been considered through the planning system and the consequences of flooding found to be acceptable. In the few instances where sites do not have planning consent, the requirement for developers to complete a Flood Consequences Assessment will be identified within the plan and planning consent will only be granted where it can be demonstrated to the satisfaction of all parties that the flood consequences can be managed.
- 4.10.3 It is considered that the evidence base for the justification of sites in flood risk areas is sound and where additional information is required, this will be the responsibility of developers to provide at planning application stage. Should any sites be refused planning consent in the future for highly vulnerable development, this would not undermine the housing land requirement due to an over- allocation of land.

APPENDIX 1

Settlements with potential flood risk issues in the Rhymney and Ebbw catchments

Watercourse	Settlement	Flooding characteristics
River Rhymney	Rhymney	The river runs through the Capital Valley Industrial Park in Rhymney
River Rhymney	New Tredegar	Development on both sides of the river is at flood risk, including properties along Birchgrove. We recorded flooding in Chapel Street in Oct/Nov 2000 but no FWAs are in place at present.
River Rhymney Nant Bargod Rhymney	Bargoed	The right-hand tributary, Nant Bargod Rhymney, joins the River Rhymney at the north of Bargoed. A small section of the B4511 road and the ambulance station to the south of B4511 road are at flood risk.
River Rhymney Nant Caeach W/C Nant Cylla W/C	Ystrad Mynach	Confluence of two ordinary watercourses (Nant Caeach and Nant Cylla) to the west of Ystrad Mynach. Relatively large settlement with dense development on both sides of the Rhymney. The southern part of Ystrad Mynach, including the Duffryn Business Park, is defended up to a 1% AEP (1 in 100 year) flood event. Property is liable to flooding from the Rhymney when flows exceed the capacity of the Ystrad Mynach Bridge.
River Rhymney	Llanbradach	The area is at risk from the Rhymney however there are defences in place that provide protection up to a 1% AEP (1 in 100 year) event. Possible surface water flooding in Heol Beulach
River Rhymney Nant Yr Aber Porset Brook	Bedwas	Nant Yr Aber and Porset Brook join the Rhymney at the southwest end of Bedwas. A large area of low-lying agricultural pasture lies opposite the Bedwas House Industrial Estate. This flood storage area is inundated to a depth of about 3m and must be retained as undeveloped land to protect the industrial area from flooding. The Pant-Glas Industrial Estate is protected up to a 1% AEP (100year return period) event.
River Rhymney Nant Yr Aber Porset Brook	Caerphilly	Corbetts Lane at the northern end of Caerphilly is at flood risk from the Rhymney. Nant Yr Aber and Porset Brook run through the centre of Caerphilly; properties bounded by the rivers are at highest flood risk. Defences are in place along the Nant Yr Aber and the Standard of Protection (SoP) is up to a 1% AEP (100-year) flood event.
River Rhymney	Machen	Dense developments on both sides of the river, especially around Chestnut Close and Tyn Y Waun Road, but properties are protected up to a 1% AEP (100-year) event. Blockages of Forge Road Bridge can cause flooding Properties at Green Row on the right bank of Rhymney could not be successfully protected due to underground seepage problems
River Sirhowy	Pontllanfraith	Development on both sides of the river is at flood risk. Pontllanfraith is at risk from the Sirhowy and surface water flooding. Recorded flooding in December 1979 and Oct/Nov 2000.

River Sirhowy	Ynysddu	Development on both sides of the river is at flood risk. Properties along Station Avenue are protected up to a 1% AEP (1 in 100 year) flood event.
River Sirhowy	Cwmfelin-fach	Settlement on the right-hand side of the river is at flood risk, including properties around Stanley Street and Penllwyn Street.
River Ebbw	Newbridge	Culvert blockage is an issue in Newbridge and settlements on both sides of the river are at flood risk.
River Sirhowy River Ebbw	Crosskeys	Crosskeys is at risk of confluence flooding from the Sirhowy and Ebbw but defences are present and properties are protected up to a 0.5% AEP (1 in 200 year) event.
River Ebbw	Risca	Dense development on the left-hand side of the river; including properties along the B4591 road. Flood defences between 1% AEP (1 in 100 year) and 0.5% AEP (1 in 200 year) standard are present.

Source: Environment Agency Wales (2006) Eastern Valleys Catchment Flood Management Plan

APPENDIX 2

Summary of current fluvial flood risk in Eastern Valleys from a 1% (1 in 100) annual chance event under current catchment conditions

	People	Property and infrastructure		Environment	Economy
Community	People at flood risk	Properties at flood risk	Important infrastructure /assets at risk	Natural and historical environmental assets at risk	Total direct economic damages (£000)
Caerphilly	519	231	1 café 1 public house	-	8,089
New Tredegar	257	121	-	-	6,408
Newbridge	25	11	1 school 1 sports/leisure centre 1 area used for storage 1 industrial workshop 1 public house	-	3,290
Machen	279	127	-	Plas Machen Wood SSSI	3,155
Bedwas	3	-	2 offices 1 sports club 2 public houses	-	1,669
Bargoed	11	-	1 sports club	-	327
Llanbradach	28	12	-	-	188
Pontymister	-	-	1 industrial warehouse 1 industrial workshop	-	160
Abercarn	-	-	1 area of heavy industry	-	122
Ynysddu	-	4	-	-	98
Crosskeys	-	-	-	-	35
Ystrad Mynach	10	-	-	-	12

Source: Environment Agency Wales (2006) Eastern Valleys Catchment Flood Management Plan

APPENDIX 3

Existing information on sites with Zone C

LDP Ref	Site Name	Proposed Use	Zone C1	Zone C2	Proportion of site	FCA Completed	Planning Status	Water-course	Surface water run-off rate	EA Comments
HG 1.68	St Illans Comprehensive, Caerphilly	Housing and primary schools	Yes	Yes	Approx 60%	Yes	No planning application has been submitted	Nant Yr Aber	Unknown	The EA has requested that an SFCA should be undertaken on the site to inform its allocation in the LDP. This work is currently being undertaken (July 2008)
HG 1.25	Navigation Colliery, Crumlin	Housing	No	Yes	Approx 10%	Yes	No planning application has been submitted	River Ebbw	Greenfield run-off rate	The EA has requested that an SFCA should be undertaken on the site to inform its allocation in the LDP. This work is currently being undertaken (July 2008)
HG 1.59	Sufflex Factory, Pontymister	Housing	Yes	Yes	Whole site	Yes (as part of 07/1524/FULL)	Planning application submitted - awaiting determination	River Ebbw	Unknown	The assessment of flooding consequences has been considered and the EA have no objections subject to conditions that no development should commence until a scheme for the provision and implementation of a surface water regulation scheme has been submitted and approved.
HG 1.61 and CF 1.35	Waterloo Works, Waterloo	Housing and primary school	Yes	Yes	Approx 80% C1/C2	Yes (as part of P/06/0037)	Site has outline planning consent subject to the signing of a Section 106 agreement	River Rhydney	Unknown	Original objection raised on flood risk grounds but withdrawn as new information was provided as an addendum to the previously submitted FCA

LDP Ref	Site Name	Proposed Use	Zone C1	Zone C2	Proportion of site	FCA Completed	Planning Status	Water-course	Surface water run-off rate	EA Comments
CF 1.38 and CM 4.7	Former Palace Cinema, Risca	Retail and library	Yes	Yes	100% C1/C2	Yes (as part of P/06/0045)	Site has full planning consent for a food store, retail and office uses on the ground floor and new library at the first floor	River Ebbw	Unknown	No objection subject to a specified minimum floor level
CF 1.17	Land at Ystrad Fawr, Ystrad Mynach	Local General Hospital	Yes	Yes	100% C1/C2	Yes (as part P/06/0164)	Site was granted outline consent in 2007 and reserved matters in 2008	River Rhymney	Unknown	P/06/0164 -Initial consultation with the EA indicated that the TAN 15 development advice maps were incorrect with the entire site being classified as C1 rather than C2. FCA considered to be acceptable. Land drainage consent required for works in, under or over the River Rhymney. No objection as part of 08/0188/RM
CM 4.5	Gateway Site, Newbridge	Offices	No	Yes	30% C2	No	Site has planning consent for an office building, fast food restaurant and public restaurant. The office and pub have been developed and this allocation relates to the site of the fast food restaurant, which is proposed for office use in the LDP	River Ebbw	Unknown	P/04/0570 - no objection subject to conditions concerning the control of surface water and the provision of an oil interceptor. The site lies above the theoretical 1 in 1000-year level. The EA have confirmed as a result of consultations through the LDP process that there are no objections to the allocation of this site.
CM 4.11	Gallaher Retail Park Redevelopment, Caerphilly	Retail Warehousing	No	Yes	100% C2	Yes (as part of P/05/1369) by Hadfield Cawkwell Davidson	Site has full planning consent for new retail warehousing (site of Focus retail unit)	Nant Yr Aber	Unknown	P/05/1369 - original objection but applicant submitted a further assessment which the EA considered to be acceptable

LDP Ref	Site Name	Proposed Use	Zone C1	Zone C2	Proportion of site	FCA Completed	Planning Status	Water-course	Surface water run-off rate	EA Comments
CM 4.8	Adjacent to Lidl, Pontymister	Retail	Yes	Yes	100% C1/C2	Yes (as part of 07/1261/OUT)	Site was granted outline consent in 2008	River Ebbw	Restricted to greenfield flows	07/1261/OUT - the EA considers the FCA to be acceptable - minimum floor level of 1 metre above the 1 in 100 year flood level recommended and buffer zone of 4m
HG 1.79	Land at Jeremy Oils, Llanbradach	Housing	Yes	Yes	100% C1/C2	No	Site was granted outline planning consent (P/04/0873) and reserved matters (P/06/0695)	River Rhymney	Unknown	P/06/0695 no objection subject to conditions
HG 1.58	Eastern part of land adjacent to River Ebbw, Risca	Housing	Yes	Yes	100% C1/C2	Yes (as part of 06/0472/OUT) prepared by Hyder Consulting	Site was granted outline planning consent (06/0472/OUT) subject to S106	River Ebbw	Unknown	EA have considered the FCA to be acceptable, although a minimum floor level of 600mm above the 1:100 Year Flood Level is recommended
HG 1.71	Gas Works Site, Mill Road, Caerphilly	Housing	No	Yes	25% C2	No	Site was granted outline planning consent (P/03/1032) S106 negotiations still ongoing	Nant Yr Aber	Unknown	No objections although site investigation required.
HG 1.60	Tyn y Waun Farm, Machen	Housing	No	Yes	10% C2	Yes (as part of P/01/1269)	Site was granted outline consent (P/01/1269 and reserved matters in 2005 (P/05/0367)	River Rhymney	Unknown	Environment Agency (Wales) confirms that so long as the development area conforms with that shown in the outline permission i.e. P/01/1269, the issue of development and flood risk has been addressed.

LDP Ref	Site Name	Proposed Use	Zone C1	Zone C2	Proportion of site	FCA Completed	Planning Status	Water-course	Surface water run-off rate	EA Comments
HG 1.03	Old Barrel Store, Rhymney	Housing	No	Yes	10% C2	No	Site granted full consent (06/0066/FULL)	River Rhymney	Unknown	EA confirm that the risk of fluvial flooding to the site to be minimal and withdraw their original objection. However, it requests a condition be attached to any consent requiring a scheme for the provision and implementation of a surface water regulation system to be submitted and approved by the local planning authority.
HG 1.50	Land west of the A467 and Afon Ebbw, Abercarn	Housing	No	Yes	50% C2	Yes (submitted as part of 06/0068/FULL)	Phase one granted full consent (06/0068/FULL) and phase two granted RM consent (06/0716/RM)	River Ebbw	Unknown	EA confirm that an acceptable FCA has been submitted demonstrating the whole of the site is above the 1:1000 year flood level
HG 1.66	Land at Venosa Trading Estate, Caerphilly	Housing	No	Yes	100% C2	Yes (submitted as part of 07/0447/FULL)	Site was granted outline planning consent (07/0447/FULL) subject to S106	Porset Brook	Unknown	No objection on the basis of the Flood Consequences Assessment demonstrates that the risk of flooding can be acceptably managed even though this site is located in a zone C2 area.
EM 1.10	Duffryn Business Park North, Ystrad Mynach	Employment	Yes	No	50% C1	No	The site has an extant planning consent from 1969, which has been partially implemented by virtue of the construction of industrial units on part of the site.	River Rhymney	Unknown	The requirement to undertake an FCA as part of any subsequent allocation has been identified in the Appendix of the LDP

LDP Ref	Site Name	Proposed Use	Zone C1	Zone C2	Proportion of site	FCA Completed	Planning Status	Water-course	Surface water run-off rate	EA Comments
EM 1.11	Duffryn Business Park South, Ystrad Mynach	Employment	Yes	Yes	75% C1/C2	No	The site has an extant planning consent from 1969, which has been partially implemented by virtue of the construction of industrial units on part of the site.	River Rhymney	Unknown	The requirement to undertake an FCA as part of any subsequent allocation has been identified in the Appendix of the LDP