Tewkesbury Borough Council

18 September 2017

Committee	Planning
Date	Tuesday, 26 September 2017
Time of Meeting	9:00 am
Venue	Council Chamber

ALL MEMBERS OF THE COMMITTEE ARE REQUESTED TO ATTEND

for Sara J Freckleton
Borough Solicitor

Agenda

1. ANNOUNCEMENTS

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2. APOLOGIES FOR ABSENCE AND SUBSTITUTIONS

To receive apologies for absence and advise of any substitutions.

3. DECLARATIONS OF INTEREST

Pursuant to the adoption by the Council on 26 June 2012 of the Tewkesbury Borough Council Code of Conduct, effective from 1 July 2012, as set out in Minute No. CL.34, Members are invited to declare any interest they may have in the business set out on the Agenda to which the approved Code applies.

4. MINUTES 1 - 24

To approve the Minutes of the meeting held on 31 August 2017.

5. DEVELOPMENT CONTROL - APPLICATIONS TO THE BOROUGH COUNCIL

(a) Schedule

To consider the accompanying Schedule of Planning Applications and proposals, marked Appendix "A".

6. FLOOD AND WATER MANAGEMENT SUPPLEMENTARY PLANNING DOCUMENT 25 - 169

To consider and comment upon the revised Flood and Water Management Supplementary Planning Document.

7. CURRENT APPEALS AND APPEAL DECISIONS UPDATE 170 - 174

To consider current Planning and Enforcement Appeals and CLG Appeal Decisions.

DATE OF NEXT MEETING

TUESDAY, 24 OCTOBER 2017

COUNCILLORS CONSTITUTING COMMITTEE

Councillors: Mrs G F Blackwell, D M M Davies, M Dean, R D East (Vice-Chair), J H Evetts (Chair), D T Foyle, R Furolo, Mrs M A Gore, Mrs J Greening, Mrs R M Hatton, Mrs A Hollaway, Mrs E J MacTiernan, J R Mason, A S Reece, T A Spencer, Mrs P E Stokes, P D Surman, D J Waters and P N Workman

Substitution Arrangements

The Council has a substitution procedure and any substitutions will be announced at the beginning of the meeting.

Recording of Meetings

Please be aware that the proceedings of this meeting may be recorded and this may include recording of persons seated in the public gallery or speaking at the meeting. Please notify the Democratic Services Officer if you have any objections to this practice and the Chair will take reasonable steps to ensure that any request not to be recorded is complied with.

Any recording must take place in such a way as to ensure that the view of Councillors, Officers, the public and press is not obstructed. The use of flash photography and/or additional lighting will not be allowed unless this has been discussed and agreed in advance of the meeting.

TEWKESBURY BOROUGH COUNCIL

Minutes of a Meeting of the Planning Committee held at the Council Offices, Gloucester Road, Tewkesbury on Thursday, 31 August 2017 commencing at 9:00 am

Present:

Chair Councillor J H Evetts

and Councillors:

R E Allen (Substitute for R D East), P W Awford (Substitute for Mrs J Greening), Mrs G F Blackwell, D M M Davies, M Dean, D T Foyle, R Furolo, Mrs M A Gore, Mrs R M Hatton, Mrs A Hollaway, Mrs E J MacTiernan, J R Mason, A S Reece, Mrs P E Stokes, P D Surman, H A E Turbyfield (Substitute for T A Spencer), D J Waters and P N Workman

PL.21 ANNOUNCEMENTS

21.1 The evacuation procedure, as noted on the Agenda, was advised to those present.

21.2 Members were reminded that, at its meeting on 17 May 2016, the Council had confirmed the Scheme for Public Speaking at Planning Committee as a permanent arrangement. The Chair gave a brief outline of the scheme and the procedure for Planning Committee meetings.

PL.22 APOLOGIES FOR ABSENCE AND SUBSTITUTIONS

22.1 Apologies for absence were received from Councillors R D East, Mrs J Greening and T A Spencer. Councillors R E Allen, P W Awford and H A E Turbyfield would be acting as substitutes for the meeting.

PL.23 DECLARATIONS OF INTEREST

23.1 The Committee's attention was drawn to the Tewkesbury Borough Council Code of Conduct which was adopted by the Council on 26 June 2012 and took effect from 1 July 2012.

23.2 The following declarations were made:

Councillor	Application No./Item	Nature of Interest (where disclosed)	Declared Action in respect of Disclosure
P W Awford	17/00448/OUT Deepfurrow House, Main Road, Minsterworth. 17/00104/OUT Land Adjacent to Rosedale House, Main Road, Minsterworth.	Is a Borough Councillor for the area. Is a Gloucestershire County Councillor for the area.	Would speak and vote.
Mrs G F Blackwell	17/00550/FUL 11 Kaybourne Crescent, Churchdown.	Is a Member of Churchdown Parish Council but does not participate in planning matters. Lives in a neighbouring property.	Would not speak or vote and would leave the Chamber for the consideration of this item.
R Furolo	17/00201/FUL Green Lea, Green Street, Brockworth.	Is a Member of Brockworth Parish Council but does not participate in planning matters.	Would speak and vote.
Mrs R M Hatton	17/00201/FUL Green Lea, Green Street, Brockworth.	Is a Member of Brockworth Parish Council but does not participate in planning matters.	Would speak and vote.
J R Mason	16/01425/OUT Land to the East of Evesham Road, Greet. 16/01426/OUT Land to the East of Evesham Road, Greet.	Is a Member of Winchcombe Town Council but does not participate in planning matters.	Would speak and vote.
Mrs P E Stokes	17/00550/FUL 11 Kaybourne Crescent, Churchdown.	Is a Member of Churchdown Parish Council but does not participate in planning matters.	Would speak and vote.

H A E Turbyfield	17/00201/FUL Green Lea, Green Street, Brockworth.	Is a Borough Councillor for the area. Had spoken with the applicant but had not expressed an opinion.	Would speak and vote.

23.3 The Legal Adviser indicated that several Members had queried whether they should make a declaration in respect of Item 1 – 16/01425/OUT – Land to the East of Evesham Road, Greet and Item 2 – 16/01426/OUT – Land to the East of Evesham Road, Greet, on the basis of the connection between one of the applicants and a Borough Councillor. She clarified that it was not necessary to make a declaration simply on that basis; however, Members should still apply the Code of Conduct and make any other declarations accordingly. No further declarations were made on this occasion.

PL.24 MINUTES

24.1 The Minutes of the meeting held on 1 August 2017, copies of which had been circulated, were approved as a correct record and signed by the Chair.

PL.25 DEVELOPMENT CONTROL - APPLICATIONS TO THE BOROUGH COUNCIL

Schedule

25.1 The Development Manager submitted a Schedule comprising planning applications and proposals with recommendations thereon. Copies of this had been circulated to Members as Appendix A to the Agenda for the meeting. The objections to, support for, and observations upon the various applications as referred to in Appendix 1 attached to these Minutes were presented to the Committee and duly taken into consideration by Members prior to decisions being made on those applications.

16/01425/OUT – Land to the East of Evesham Road, Greet

25.2 This was an outline application for the erection of up to four dwellings and associated development with all matters reserved for future consideration except for access. It was noted that there had been no Committee Site Visit in respect of this application; however, the site had been visited in relation to the next item in the Schedule.

25.3 The Development Manager indicated that Members would have seen some of the appeal decisions received recently, the majority of which were reported in the Current Appeals and Appeal Decisions Update which appeared later on the Agenda. He explained that there had been some inconsistency in the way Inspectors had dealt with Policy HOU4 in particular, but also Policy LND2, which related to Special Landscape Areas and was applicable in this case. This was important because it affected whether the presumption in favour of sustainable development "tilted balance" applied. If relevant policies were considered out of date, the presumption in favour of sustainable development "tilted balance" did apply, irrespective of whether a five year deliverable supply of housing sites could be demonstrated. Whilst different Inspectors had dealt with the policies differently, this had not changed the way Officers dealt with Policy HOU4 – it remained their view that Policy HOU4 was not out of date and should be given considerable weight in planning decisions, as agreed by the Inspector who had dealt with the Mill Lane, Prestbury appeal. This was because Policy HOU4 was

consistent with the National Planning Policy Framework in that it sought to protect the countryside and encourage sustainable patterns of development. This approach appeared to be supported by the Secretary of State in the appeal decisions he had made recently.

25.4 In terms of this application specifically, Members would note from Paragraph 5.29 of the Officer report that there was an outstanding issue in respect of drainage. This matter had been discussed with the Lead Local Flood Authority and the Legal Adviser and it was considered that, as the applicant owned the land to the rear of the site, drainage issues could be addressed by a Grampian condition which may ultimately require easements to be provided by way of legal agreement. This proposal clearly conflicted with Policy HOU4 and would result in landscape harm as set out in the report; furthermore, it conflicted with the adopted Winchcombe and Sudeley Neighbourhood Development Plan (NDP) which was now part of the development plan. Section 38(6) of the Planning and Compulsory Purchase Act required applications to be dealt with in accordance with the development plan unless material planning considerations indicated otherwise. Given the conflict with Policies HOU4 and LND2, and Policy 3.1 of the newly adopted NDP, the presumption was that planning permission should be refused unless there were material considerations that suggested otherwise; any such considerations must be powerful due to the precedence given to the development plan by law. There was strong objection from the Town Council and further objections from consultees including the Landscape Officer and Campaign for the Protection of Rural England (CPRE), as well as 41 local residents and the local MP. Whilst there would be some minor benefits arising from the proposal in terms of the provision of housing and the associated economic benefits, this did not justify a departure from policy given the small scale nature of the scheme.

25.5 The Chair invited a local resident to address the Committee. She indicated that her comments also applied to the next item in the Schedule. The points she wished to raise had already been set out in the 41 objections from the residents of Greet. In terms of location, there had been significant new housing developments on the borders of Greet and 14 houses were currently being built in the village; residents felt that another development on this valued green space, outside of the recognised settlement boundary, would tip the balance from rural village to urban sprawl. The green areas, such as the development site, were important assets for both Winchcombe and Greet as they attracted tourists and walkers, as well as contributing to the wellbeing of residents. In the recommendations, the Planning Officers recognised the intrinsic value of the proposed development site and she wholeheartedly endorsed their view and conclusion on design and visual impact. With regard to highways and accessibility, the road was unsafe with an inadequate footpath, poor visibility and speeding traffic. In 2016, a Highways Officer had expressed serious concern about public safety after an inspection of the route between Winchcombe School and Greet. Whilst there may not have been any serious accidents recorded, a number of walkers had been hit by wing mirrors from speeding cars. This portion of the road had been closed the previous week, with traffic directed down Market Lane, giving her an opportunity to see the volume of traffic and high speed of many of the drivers first-hand. On the Evesham Road, some motorists had removed cones and proceeded despite the road closed signs. In respect of flood risk, many properties on Market Lane experienced ground water remaining at surface level for prolonged periods of time and many houses needed to use sandbags to prevent flooding. During periods of rain, water ran off the proposed site into the adjoining property on Evesham Road and the back garden was waterlogged. This would be exacerbated by the proposed development and there was no clear explanation of how drainage and run-off would be dealt with. The impact of the development was deemed to be negligible by ecological appraisal; that was the view which had been taken for each of the recent developments in Greet and she questioned whether the cumulative effect was being taken into account; this was one of the last open spaces in the village so if it was developed wildlife would surely be rare.

Numerous species of animals and birds such as badgers, weasels, hedgehogs, bats, frogs, owls, kestrels and sparrow hawks had been seen in the fields, including the proposed site, and adjoining gardens. She expressed the view that, if this side of Winchcombe continued to be developed, the area would no longer be an attractive place to live or visit.

25.6 The Chair invited the applicant's agent to address the Committee. As with the last speaker, he indicated that his comments would also apply to the next item in the Schedule. He recognised that the application was difficult for Officers and agreed with the Development Manager's comments regarding the inconsistency of recent appeal decisions. During the course of the application, the position in respect of being able to demonstrate a five year supply of deliverable housing sites had changed and the local NDP had been adopted. These changes had significantly altered the pre-application advice which his clients had received; this was disappointing as they had only decided to proceed with the application with the Officer's support, in principle. Whilst pre-application comments were not binding, they were material considerations and his clients had invested so much based on the Officer's advice. Furthermore, there was an alternative assessment of planning policy to that set out within the Officer report which could allow Members to support the application; the government had advised that NDPs which did not allocate housing should be considered out of date and the five year housing supply should not be considered as a target - even if the Council could demonstrate that supply, Inspectors had recently stated that this was not relevant as the Tewkesbury Borough Local Plan was out of date. The Council had advised in January 2017 that it could demonstrate a five year housing land supply but his clients had only been informed in June 2017 that this would change the pre-application advice in relation to this application and application ref: 16/01426/OUT which was on the same site. During this time they had provided a significant amount of requested information, particularly in relation to archaeology and drainage. He would not be asking Members to overrule the Officer's assessment if his clients had not acted faithfully on the original pre-application advice or provided so much additional information after the change in policy position. He noted from the Officer report that the Landscape Officer agreed a small residential scheme could be appropriate in this location and that the Urban Design Officer would prefer road frontage dwellings; given it was an outline application, this could be accommodated at the reserved matters stage, or the application could be amended. Without over-simplifying the pre-application advice, Officers had supported the site due to its proximity to Winchcombe and, whilst policy may have changed in the intervening period, the site location had not – it remained close to all of the facilities in Winchcombe and as close to the development site immediately opposite as it had when his clients had first approached Officers. For all of these reasons, he hoped Members could support the pre-application advice and permit the application.

25.7 The Development Manager agreed it was a difficult situation, and it was unfortunate that pre-application advice had been superseded by the approval of the Joint Core Strategy Main Modifications by Council in January, but this could happen when moving from one development plan or policy to another and, in this case, the pre-application advice was clearly out of date and could not be a material consideration in determining the application. The decision had to be made in the policy context as it was now, as set out in the report. A Member understood that the housing land supply requirement for an adopted NDP was three years, as opposed to five years. In response, the Development Manager indicated that this was only relevant when an NDP allocated land for housing; in the case of the Winchcombe and Sudeley NDP, all allocations had been removed before adoption. Notwithstanding this, the Legal Adviser also clarified the question over the application of policy given a three year supply was only relevant if the Council was unable to demonstrate a five year supply, which was not the case. A local Member indicated that, at a meeting held with residents during the formulation of the NDP, it had been suggested that any housing allocated to Winchcombe would have to be within Winchcombe Town. He questioned whether the fact that Greet had never been considered as a possible location for housing could leave the NDP open to

challenge. The Development Manager advised that the Winchcombe and Sudeley NDP had been through examination and was adopted; there would have been many discussions leading up to that and, whilst all policies could be challenged, the plan should be given full weight in making a decision on this application.

25.8 The Chair indicated that the Officer recommendation was to refuse the application and he sought a motion from the floor. It was proposed and seconded that the application be refused in accordance with the Officer recommendation and, upon being put to the vote, it was

RESOLVED That the application be **REFUSED** in accordance with the Officer recommendation.

16/01426/OUT – Land to the East of Evesham Road, Greet

25.9 This was an outline application for the erection of up to 10 dwellings and associated development with all matters reserved for future consideration except for access. The Committee had visited the application site on Tuesday 29 August 2017.

25.10 The Chair indicated that there were no public speakers for this item. The Officer recommendation was to refuse the application and he sought a motion from the floor. It was proposed and seconded that the application be refused in accordance with the Officer recommendation and, upon being taken to the vote, it was

RESOLVED That the application be **REFUSED** in accordance with the Officer recommendation.

17/00424/FUL – Land at Consell Green, Tewkesbury Road, Toddington

25.11 It was noted that this application for the erection of five dwellings with garages, parking, improved vehicle access, access roads/footpath and landscape had been withdrawn.

17/00452/OUT – Land to the North of Shuthonger Garage, A38 Pages Lane to Church End Lane, Shuthonger

25.12 This was an outline application for four self-build dwellings with all matters reserved for future consideration except for vehicular access. The application had been deferred at the last Planning Committee meeting to allow Officers to properly digest the information received from the applicant's agent and to consider ways in which planning permission could be conditioned to restrict the houses to self-build dwellings only.

25.13 The Development Manager indicated that this was an unusual application and an issue which the Council had not particularly had to deal with before. Members would recall that the application had been deferred to give Officers the opportunity to consider an appeal decision relating to a site in Warminster which had been circulated on the evening before the last Planning Committee meeting, as well as to look at the possible restrictions that could be put in place. Officers agreed with the applicant that self-build could be given significant weight in decisions as it had by the Secretary of State in the Warminster appeal; however, having had chance to consider the Warminster decision fully, it was clear that the circumstances were significantly different in relation to this application. In the case of the appeal decision, the site was very close to the edge of Warminster itself and the Secretary of State had determined that it was an acceptable location for housing; that was not the case here given the clear conflict with Policy HOU4 and the identified landscape harm set out in the Officer report. Whilst the government's self-build policy and the legal requirements in relation to the self-build register, identifying need in the area, was recognised, this was not in itself a reason to grant planning permission in areas were applications would normally be refused. There was ample opportunity to meet the need demonstrated in the self-build register through sites that already had outline planning permission, or had been identified in the Borough Plan through emerging NDPs. Self-build plots could even be negotiated within larger development sites within the Joint Core Strategy. All of these options would ensure that new development was properly managed in appropriate locations. The applicant's comments in relation to accessibility were noted; however, it was clear

that most residents would be highly reliant on the private car and this weighed against the proposal. The Warminster appeal also included 30% affordable housing and the scale of development – 35 houses – meant that the social and economic benefits were far greater in that case. The applicant's agent had suggested that there was no substantive objection to the scheme; however, Twyning Parish Council had objected to the application, particularly in terms of the conflict with the adopted NDP. Whilst it was not comparable to this case, the Warminster decision did show that development in suitable locations could be acceptable even with an up-to-date development plan and a five year supply of deliverable housing sites. Notwithstanding this, Officers did not consider that the sole additional benefit of self-build housing would make what would normally be considered an unacceptable development, acceptable. In terms of a Section 106 Agreement, it was agreed that this could be used to restrict the development to self-build but it would still need to pass the strict Community Infrastructure Levy test so it would need to be relevant to the development proposed and necessary – in making something otherwise unacceptable, acceptable. It was his view that it was not the case here that self-build would make the development acceptable. If planning permission was granted, the Development Manager felt that a future application for market housing would be difficult to resist as it would appear that this location had already been accepted as appropriate for residential development.

25.14 The Chair invited the applicant's representative to address the Committee. He indicated that, at the last Planning Committee meeting, the local Member had proposed a motion, which had been duly seconded, to permit this application. The applicant had supplied a very recent self-build appeal precedent which had been upheld by the Secretary of State. After further debate it had been resolved that the application be deferred in order to allow Officers to properly digest the information received from the applicant's agent and to consider ways in which permission could be conditioned to restrict the houses to self-build dwellings only. He considered that this proposal could easily be restricted to self-build, as with the Warminster appeal and numerous other cases. Under the suggested terms, the applicant would have two years to sell the plots as self-build; if unsold after that time they would be offered to registered social landlords as affordable housing plots. He confirmed that the applicant was open to discussion on the specifics of the agreements but no contact had been made by Officers in this regard. The Officer report stated that the application was contrary to Policy HOU4, but, of the four appeals determined in the Tewkesbury Borough area since the last Committee meeting, three Inspectors had given it little or no weight. In his view, Policy HOU4 was clearly out of date with regard to its ability to meet the duty to provide self-build homes and he pointed out that there were three applications on the Agenda today which were contrary to Policy HOU4 but recommended for permission. One of those applications was for open market dwellings at Stratford Bridge Garage, Ripple which was recommended for permission despite Officers describing the bus service as 'relatively frequent'; this site was not only closer to Tewkesbury and Twyning, and with many more services, but was on exactly the same bus route as that application and yet the service was described as 'infrequent' in this report. In summary, he indicated that this was an owner-led application for self-build only; there was a duty to permit self-builds; the proposal was sympathetic to existing developments nearby; no objections had been made by the neighbours, County Highways or Severn Trent Water; and the site was accessible and serviced by buses and footpaths. On that basis, he asked Members to permit the application, subject to a Section 106 Agreement limiting the dwellings to self-build.

25.15 A Member sought clarification as to whether permitting the development would set a precedent for market housing, or other development which would be contrary to Policy HOU4, even with a condition to restrict this application to self-build only. The Legal Adviser explained that it was more nuanced than that but, in this case, it appeared that there were no material considerations to justify permitting the application against policy other than the dwellings being self-build, which Officers felt to be very thin; if an application came forward for market housing the argument would be that this site had

already been recognised as a suitable location for housing. The Development Manager clarified that it was not suggested that the bus service was infrequent in respect of this application and he pointed out that, even in the Stratford Bridge Garage application the locational disadvantage weighed against the proposal; however, in that case there were other material considerations which meant that it had been recommended favourably. He did not feel there had been inconsistency in approach and advised that Officers had weighed up the planning balance and did not feel that material planning considerations existed that would outweigh the conflict with the development plan.

25.16 A Member noted the comment made by the applicant's representative that the plots would be offered to registered social landlords for affordable housing if they could not be sold as self-build within two years and she sought clarification as to whether this was feasible. The Development Manager explained that this had been mentioned in one of the emails set out in the Additional Representations Sheet, attached at Appendix 1. It was not something which had been considered in detail but it would be necessary to look at whether there was a particular need and if this was an acceptable location for affordable housing. The Legal Adviser indicated that the application had been put forward on the basis of being self-build and not as an affordable housing site. If they could not be sold as self-build plots, the rationale for the proposal being granted due to it being self-build was no longer plausible. Self-build was not speculative and if there was nobody who wished to take up the option to self-build it would be inappropriate for the plots to be offered as non self-build affordable housing. She had looked at the Section 106 Agreement in respect of the Warminster appeal and there had been no such cascade.

25.17 The Chair indicated that the Officer recommendation was to refuse the application and he sought a motion from the floor. It was proposed and seconded that authority be delegated to the Development Manager to permit the application, subject to a Section 106 Agreement to secure the dwellings as self-build, and appropriate planning conditions. The proposer of the motion indicated that he had seconded the motion to permit the application at last month's Committee largely on the basis of the need to provide self-build dwellings in the borough. The appeal decision in relation to Warminster had been an interesting read and he agreed that it was very different from this modest proposal for four dwellings which would sit on the end of the existing ribbon development. He understood that the applicant had owned the land since the 1960s so the site had not been purchased in a speculative way. In terms of the second recommended refusal reason he did not agree that the development would result in an unwarranted intrusion into the rural landscape, given its small scale, nor would it have a harmful impact on the character and appearance of the locality. He reiterated that the scheme would fulfil some of the borough's self-build requirements and its modest nature meant that any harm would be limited. He did not dispute that the proposal was in conflict with HOU4 but, as with most applications, it was a question of balance and he felt that the application should be permitted.

25.18 A Member raised concern that permitting this application would have a knock on effect given that it would be contrary to the Council's own policies. Another Member pointed out that all applications should be considered on their own merits so the decision in respect of this proposal should not necessarily have an impact on any future applications. In terms of recommended refusal reason 4, which stated that residents of the proposed development would be heavily reliant on the use of the private motor car, the Member indicated that there were already houses in that location and, as set out in the agent's letter included in the Additional Representations Sheet, they were well served by local facilities including a café; shop; public house; takeaway; hotel complex with gym, swimming pool and golf course; car repair garage; church; and a bus for Tewkesbury School. In addition, a Member had noted on the Committee Site Visit the previous month the blue sign which denoted that the site was on a cycle route. The Development Manager acknowledged that there were facilities in the area, as there were in all rural areas, but this did not overcome the fact that future residents would be

likely to be highly reliant on the private car to meet their day to day needs. In terms of cycling, Members would recall that it had been referenced in consideration of the Mythe application that walking and cycling was not an attractive proposition because of the topography of the route between Tewkesbury Town and the application site and safety concerns in the winter months. With regard to the knock-on effects of permitting this application, he reiterated that each application should be determined on its own merits but it should be borne in mind that, if an application was received for residential development in an adjoining field, one of the merits of that proposal would be the fact that planning permission had been granted for housing in the field next door. If Members were minded to grant delegated permission, he suggested that conditions would need to be included in respect of landscaping, design, levels, drainage, parking and manoeuvring and access. In addition, it would be necessary to ensure that the size of the development was below the threshold for affordable housing i.e. not exceeding 1,000sqm, either by condition or through the Section 106 Agreement.

25.19 A Member expressed the view that this proposal went against the Council's policies and he did not feel that Members should pick and choose when they applied in order to suit particular proposals. The proposer of the motion pointed out that the Committee was entitled to take an alternative view to that put forward by Officers and this had happened the previous month when an application for housing in Minsterworth had been permitted despite being recommended for refusal. He went on to indicate that he would not be seeking permission had the application been for a greater number of houses on the opposite side of the road, however, the proposal was modest and would fit in well with the existing ribbon development. The Development Manager clarified that the justification for permitting the application referenced by the proposer of the motion was largely due to the fact that Minsterworth was a service village in the Joint Core Strategy and had been identified as capable of some residential development.

25.20 Upon being put to the vote, it was

RESOLVED That authority be **DELEGATED** to the Development Manager to **PERMIT** the application, subject to a Section 106 Agreement to secure the dwellings as self-build, and appropriate planning conditions.

16/01152/FUL – Stratford Bridge Garage, Stratford Bridge, Ripple

25.21 This application was for demolition of existing automotive repair premises and bungalow and erection of three detached residential dwellings; change of use of site from part commercial/part residential to wholly residential.

25.22 The Planning Officer advised that, as set out at Page No. 233, Paragraphs 5.1-5.4 of the Officer report, the site lay outside of a recognised settlement boundary and was subject to Policy HOU4 which set out that new residential development would only be permitted where such dwellings were essential to the efficient operation of agriculture or forestry or the provision of affordable housing. Consequently, the application was in conflict with Policy HOU4 and planning permission should be refused unless material circumstances indicated otherwise. The Council was able to demonstrate a five year supply of housing land and therefore the presumption in favour of sustainable development, as set out in Paragraph 14 of the National Planning Policy Framework, did not apply. In this specific case, it was felt that removal of the existing intensive and unneighbourly car repair business on the site and replacement with small-scale residential development would, on balance, outweigh the conflict with the development plan and it was recommended that planning permission be granted on that basis.

25.23 A Member queried whether the closure of the existing car repair business had been taken into account and was advised that this was a matter for the individual applicant who had decided they wished to remove the business from this plot; the closure in itself was not a concern in this case. A Member indicated that there had been situations in the past when sites had been left in disrepair to improve the chances of obtaining planning permission and he questioned whether this was a factor in this case. The

Development Manager clarified that the condition of the site was not the issue here; rather it was the nature of the use of the site which would inevitably have an impact on the appearance of the area. On balance, it was felt that the proposed use would be an improvement to the local area, although this was a matter of judgement. A Member questioned whether the Conservation Officer had any comments on the current scheme having raised objection to the original scheme. The Planning Officer clarified that there was a listed building to the rear of the site and the Conservation Officer had no objections to the impact on this heritage asset. Notwithstanding this, they had raised concerns in respect of the design, although they did feel that the proposal before Members was an improvement on the original.

25.24 The Chair indicated that there were no public speakers for this item. The Officer recommendation was to permit the application and he sought a motion from the floor. It was proposed and seconded that the application be permitted in accordance with the Officer recommendation. A Member raised concern that the Conservation Officer had seemed to suggest that the design of the scheme could be further improved. In response, the Development Manager advised that, whilst it was not considered to be exemplar, a lot of work had been done to improve the proposal and both the Conservation Officer and Planning Officer felt that it was an acceptable scheme for the site. In his view, any further improvement would mean a reduction in the number of units on the site which had been suggested to the applicant throughout the process but was not something they wished to do. It was a matter of judgement for Members as to whether the material planning considerations outweighed the conflict with Policy HOU4. A Member indicated that she was not happy to support the motion at this stage when it seemed so finely balanced on comparing what was currently there against a scheme that was thought could be better and she proposed that the application be deferred for a Committee Site Visit to assess the impact of the existing building on the character and appearance of the area. This proposal was seconded and, upon being put to the vote, it was

RESOLVED That the application be **DEFERRED** for a Committee Site Visit by the Sites Inspection Panel to assess the impact of the existing building on the character and appearance of the area.

17/00718/CLP – 58 Courtney Close, Tewkesbury

25.25 This application was for a certificate of lawful proposed development for construction of a single storey side extension.

25.26 The Chair indicated that there were no public speakers for this item. The Officer recommendation was to grant the certificate and he invited a motion from the floor. It was proposed and seconded that the certificate be granted in accordance with the Officer recommendation and, upon being taken to the vote, it was

RESOLVED That the application be **GRANTED** in accordance with the Officer recommendation.

17/00201/FUL – Green Lea, Green Street, Brockworth

25.27 This application was for the erection of a tool shed and garden room and siting of air source heat pump for the main house heating; design and finish matching the main house.

25.28 The Chair invited a local resident to address the Committee. She explained that the application was the third in a series of applications designed to secure a large house on the site. Planning permission for a new dwelling had been granted in August 2016 after it had been made smaller and moved away from her property, and yet a subsequent application to increase its height and length, and to rotate the dwelling so that the sitting room would be next to the proposed garden room, had been granted in March 2017. In her view, it was clearly intended that it would form part of a larger house in the future, as such, it was important that Members considered the impact of the development as a whole on the Area of Outstanding Natural Beauty, Green Street and

her property. She went on to indicate that there would be no visual separation from her property as the gap between her house and the new dwelling would be considerably reduced. She objected to the fact that the garden room was proposed to be so close to her garage in order for the wall and floor levels to line up with the previously approved dwelling; she was in no doubt that the applicant intended to submit another application to join-up the room in the future. She went on to explain that, in order to reduce visibility, the proposal would be built at a lower level which would involve digging down to three metres; she was extremely concerned about the impact on the stability of her dwelling, which was very old and had no foundations, as many old houses in the area had slipped. The proposal would be half hidden behind her garage which would have a detrimental impact on its appearance and would be out of keeping with the area. She understood that it would be necessary to divert the footpath which ran through the site and she felt that this could threaten security. The existing trees which currently had a screening effect would be destroyed with no space to replace them and of particular concern was the cast iron water main beneath the site which was still in use.

25.29 In response to a Member query, the Development Manager clarified that the photograph displayed to the Committee showed the existing site. The new dwelling had not yet been built and this proposal was for a garden room to go alongside that, as well as a small amendment to the new dwelling to accommodate an air source heat pump. The Chair indicated that the Officer recommendation was to permit the application and he sought a motion from the floor. It was proposed and seconded that the application be deferred for a Committee Site Visit in order to assess the impact of the proposals on the character and appearance of the Area of Outstanding Natural Beauty and the residential amenity of the neighbouring property. A Member indicated that if the motion failed he would be suggesting that the application be refused as the new building had not yet been built and the application should be submitted once it had been. Upon being put to the vote, it was

RESOLVED That the application be **DEFERRED** for a Committee Site Visit to assess the impact of the proposals on the character and appearance of the Area of Outstanding Natural Beauty and the residential amenity of the neighbouring property.

17/00448/OUT – Deepfurrow House, Main Road, Minsterworth

25.30 This was an outline application for the erection of a four bedroom, two-storey dwelling adjacent to Deepfurrow House.

25.31 The Chair indicated that there were no public speakers for this item. The Officer recommendation was to permit the application and he sought a motion from the floor. It was proposed and seconded that the application be permitted in accordance with the Officer recommendation and, upon being put to the vote, it was

RESOLVED That the application be **PERMITTED** in accordance with the Officer recommendation.

17/00550/FUL – 11 Kaybourne Crescent, Churchdown

25.32 This application was for the construction of a two bedroom bungalow.

25.33 The Chair indicated that there were no public speakers for this item. The Officer recommendation was to permit the application and he sought a motion from the floor. It was proposed and seconded that the application be permitted in accordance with the Officer recommendation and, upon being taken to the vote, it was

RESOLVED That the application be **PERMITTED** in accordance with the Officer recommendation.

17/00104/OUT – Land Adjacent to Rosedale House, Main Road, Minsterworth

25.34 This was an outline application for the erection of five dwellings with access and layout for approval.

25.35 The Chair invited the applicant's agent to address the Committee. He explained that the proposal was a product of very positive consultation and he was grateful to Officers for their time and effort. The Officer report provided a comprehensive assessment of the scheme against relevant policies and guidance, concluding that the proposals represented sustainable development and recommending delegated permission be granted, subject to the resolution of highway matters. It was important to note that County Highways had raised no objection to the proposals. This response followed extensive discussions regarding access into the site and the submission of an access design that included a right turn lane into both the application site and the site across the road which had recently been approved for six dwellings. The Officer report confirmed that the proposed access arrangement was safe and suitable and it was understood that the only highways matter outstanding related to the application across the road, which Officers were working to resolve. There had been no objections from statutory consultees and the application was supported by Minsterworth Parish Council. Only two objections had been received from members of the public, one of which raised concern regarding the position of two visitor parking bays that had since been removed from the proposals, whilst the other raised design concerns that were effectively dealt with in the Officer report. Officers had concluded that the density of the proposal, at 12.5 dwellings per hectare, was appropriate and that the layout had been positively designed with regard to locating dwellings in line with Rosedale House and the Rookery. In terms of the principle of the proposed development, Minsterworth was identified as a service village in the Joint Core Strategy i.e. it could accommodate development proportional to its size and function and reflecting its proximity to either Cheltenham or Gloucester. The relatively small scale of the proposals clearly reflected the size and function of Minsterworth as a service village; furthermore, the site was located just three miles west of Gloucester, 20 metres from a bus stop with services to the city every 30 minutes, and just 5-10 minutes' walk from Minsterworth Primary School and Village Hall. It was clear that the site was sustainably located with respect to the facilities on offer in the village and that the design of the proposals was appropriate for the site and its surroundings. The site represented a suitable and sustainable source of housing in an identified service village and he respectfully requested that the Committee permit the application.

25.36 A Member noted that Minsterworth was a service village and she questioned what percentage of housing had already been committed over and above the existing housing in the village. Another Member questioned whether Officers were happy with the proposed layout given that a linear style was often favoured for new developments where the existing development was linear. The Development Manager advised that he did not have the information to hand in respect of the amount of development that had been permitted in the area. He drew attention to the plan at Page No. 268/B of the Officer report and explained that, whilst the new dwellings would be in front of the existing linear development, because of the particular site layout, with the Eame Hill farmstead behind and the staggered siting of both Rosedale House and The Rookery, adding depth was something which could be achieved without harm to the local area in this particular case. A Member sought clarification as to whether an affordable housing contribution was required and was advised that the threshold for affordable housing was 11 dwellings or above, or a total floorspace not exceeding 1,000sqm; whilst this development was for five dwellings, it was unclear at this stage what the total floorspace would be but assurance was provided that the development could be controlled by condition to ensure it stayed within the threshold.

25.37 A Member sought confirmation that no objection had been raised by County Highways, given that this was the fastest section of the A48 in both directions. The Development Manager reiterated that County Highways raised no objection to the proposal in principle; however, this was dependent on the outcome of the ongoing discussions in relation to the access for the site opposite. Officers were in discussion with the developers of that site in order to understand where the access would be located and resolve the matter. If Members were minded to delegate authority to the Development Manager to permit this application and the issues could not be resolved to the satisfaction of County Highways, it would be brought back to the Committee. It was unfortunate that these circumstances were out of the applicant's control but, nevertheless, it was an issue which needed to be resolved. The Member reiterated that he had real concerns about the speed of vehicles travelling along the road and visibility splays and safe access would be crucial.

25.38 The Chair indicated that the Officer recommendation was to delegate authority to the Development Manager to permit the application, subject to the resolution of the highway matters, and he invited a motion from the floor. It was proposed and seconded that authority be delegated to the Development Manager to permit the application in accordance with the Officer recommendation. Upon being put to the vote, it was

RESOLVED That authority be **DELEGATED** to the Development Manager to **PERMIT** the application, subject to the resolution of the highway matters.

PL.26 DEVELOPMENT CONTROL - APPLICATIONS TO THE COUNTY COUNCIL

26.1 The following decisions of Gloucestershire County Council were **NOTED**:

Site/Development	Decision
17/00559/CM Gloucester North Community Fire Station Cheltenham Road East Churchdown Variation of Condition 2 – Scope of Development on Planning Consent 15/0098/TWREG3 [Erection of a training tower], dated 22/12/2016 in order to relocate the training tower.	Application **PERMITTED** subject to conditions relating to the commencement of the development and scope of the development.
17/00036/LA3 Woodmancote Primary School Station Road Bishop's Cleeve Variation of condition 3 (revision to elevation drawing from the previously submitted drawing 5092-P-600 with drawing number 5092-W-701G) relating to planning consent 15/0069/TWREG3 dated 04/09/2015.	Application **PERMITTED** subject to conditions relating to the scope of the development; soft landscaping; lighting; and tree works.

17/00228/CM Long Meadow Farm Stoke Road Stoke Orchard Retrospective change of use of an agricultural barn (part of) to a waste transfer operation (sui generis).	Application **PERMITTED** subject to conditions relating to the commencement of the development; scope of the development; permitted development; hours of working; vehicular access and highway safety; waste management; and drainage.

PL.27 CURRENT APPEALS AND APPEAL DECISIONS UPDATE

27.1 Attention was drawn to the current appeals and appeal decisions update, circulated at Pages No. 17-24. Members were asked to consider the current planning and enforcement appeals received and the Department for Communities and Local Government appeal decisions issued.

27.2 A Member was comforted to see that the appeal in respect of outline application 16/00539/OUT for up to 75 dwellings Truman's Farm, Manor Lane, Gotherington had been dismissed with the Inspector taking into account the impact on social cohesion and the detrimental effect the development would have on the village; she hoped this could be used as an argument in the forthcoming appeal in relation to Gotherington. In addition, the Inspector had given substantial weight to Policy HOU4 which may help to prevent service villages being further flooded with development in future. A Member questioned whether the Council would be challenging the decision in relation to 16/00860/FUL Land at Hillview Stables, Bushcombe Lane, Woodmancote where a single dwelling had been allowed on appeal. The Development Manager advised that the Council had six weeks from the date of the decision to submit a challenge and consideration was currently being given as to whether this would be appropriate. Members would be notified of the decision in due course.

27.3 Having considered the information provided, it was

RESOLVED That the current appeals and appeal decisions update be **NOTED**.

The meeting closed at 10:45 am

Appendix 1

SCHEDULE OF PLANNING APPLICATIONS
ADDITIONAL REPRESENTATIONS

Date: 31 August 2017

The following is a list of the additional representations received since the schedule of applications was prepared and includes background papers received up to and including the Monday before the Meeting.
A general indication of the content is given but it may be necessary to elaborate at the Meeting.

Page No	Item No	
216	3	**17/00424/FUL** **Land at Consell Green, Tewkesbury Road, Toddington** This application has now been formally WITHDRAWN by the applicant.
222	4	**17/00452/OUT** **Land to the North of Shuthonger Garage, A38 Pages Lane to Church End Lane, Shuthonger, Tewkesbury.** Paragraph 7.14 of the Officer report refers to a further representation in respect of this application and the Warminster appeal, this is set out below: From: Mark Godson Sent: 09 August 2017 14:06 To: Bob Ristic Subject: Land at Shuthonger Hi Bob Many thanks for the opportunity to provide our perspective, that is very much appreciated. 'From the applicant's perspective, the SoS appeal decision in Wiltshire can lead to a number of conclusions which would allow the Council to approve this application. The appeal decision confirms: 1. That the provision of self-build homes is a matter capable of being given significant weight in the decision making process, and so significant that a positive decision can be made in conflict with a Local Plan. This was also confirmed by the appeal decision in Reading supplied with our Planning Statement. Housing delivery in Tewkesbury has been dominated by volume home builders under the old established 'predict and provide' model of speculative housing delivery. This is only going to be reinforced by the strategic allocations of the JCS all of which are promoted by national providers. This application offers a unique opportunity to provide a genuinely different non-speculative model of housing delivery providing a self-build exemplar in Tewkesbury. 2. The SoS recognised that self-build is a type of home that is receiving significant Government support, for which there is an evidence based need in Wiltshire. There is also an evidence-based need in Tewkesbury as set out on the self-build

register. The majority of the need of the self-build register is for countryside or edge of settlement locations such as the location at Shuthonger. Such locations can only come forward through sites that are contrary to Local Plan Policy HOU4, and there is a legal duty to meet that demand. At least three entries on the register are not only seeking this type of location, but the specific part of the Borough in which the application site is located.

3. Although the SoS decision includes affordable housing as an additional benefit, this does not diminish the contribution that self-build made to the determination despite Wiltshire Council having a much more recent (NPPF compliant) Local Plan, and a 5 year supply of housing. Tewkesbury Borough Council's Local Plan was adopted approximately 10 years before the Wiltshire Plan, and the Tewkesbury Local Plan was recently found to be out of date with regard to the supply of housing in an appeal decision at Woodmancote, and regardless of the veracity of the Woodmancote decision, the Local Plan certainly doesn't cater for self-build. In addition, the S106 legal agreement would also allow Housing Associations first refusal on the site (to take it on as an affordable housing site) if they are not first sold as self-build plots.

4. Although the appeal site is closer to Warminster than Shuthonger is to Tewkesbury, the appeal site was still outside a development boundary in a linear village called Bishopstrow. However, the SoS confirmed that the appeal site was in a sufficiently accessible location with regard to non-car access, principally because bus stops within walking distance of the appeal site are serviced by a bus approximately once every hour. Exactly the same level of public transport service applies at Shuthonger; i.e. a bus approximately once every hour. Shuthonger is also within walking distance (with dedicated footways) of a café, a shop, a public house, a takeaway, a hotel complex with gym, swimming pool, and golf course, a car repair garage, a church, and is also served by a bus for Tewkesbury School. Applications on the same stretch of A38 have also been found to be sufficiently sustainable by TBC in the recent past.

5. Despite the appeal site being in a linear settlement, the non-linear scheme proposed through the appeal was found to have no landscape impact in a non-designated area. The proposal at Shuthonger proposes a linear development, in character with its surroundings in a non-designated area.

6. The SoS found that a S106 agreement or unilateral undertaking is more than capable of controlling the dwellings as self-build. Detailed terms in this regard have been supplied by the applicant for Shuthonger.

7. Although the appeal site will provide more houses than is being proposed at Shuthonger, it is significant to note that at the time the appeal was submitted there were only 19 entries on the self-build register in Wiltshire. The proposal at Shuthonger is proportionate to the character of the locality, and there is greater demand on the Tewkesbury register (currently 28).

8. The SoS confirms that the five year housing supply is a minimum and not a cap.

9. Unlike the appeal scheme in Wiltshire, there is no substantive objection from third parties. There were 52 objections to the appeal scheme at the application stage.

These are all therefore material considerations that are capable of allowing for a positive recommendation to be made despite the conflict with Policy HOU4.'

		I look forward to the inclusion of this text in the report. As requested, I have related this text to the appeal decision only. There are wider points that we have made but I have tried to keep it as compact as possible. Best regards Mark Mark Godson MRTPI Since the report was drafted, a further email has been received from the applicant and is set out below: From: Mark Godson Sent: 29 August 2017 12:40 To: Councillor Blackwell; Councillor Davies; Councillor Dean; Councillor East; Councillor Evetts; Councillor Foyle; Councillor Furolo; Councillor Gore; Councillor Greening; Councillor Hatton; Councillor Hollaway; Councillor MacTiernan; Councillor Mason; Councillor Reece; Councillor Spencer; Councillor Stokes; Councillor Surman; Councillor Waters; Councillor Workman Cc: Bob Ristic Subject: Item 4 at Planning Committee this week Dear Councillors I write in relation to agenda item 4 - Land to the north of Shuthonger Garage. You will be aware that this is a deferred item, with the resolution from the previous meeting being as follows: "That the application be DEFERRED in order to allow Officers to properly digest the information received from the applicant's agent and to consider ways in which permission could be conditioned to restrict the houses to self-build dwellings only" Hopefully, you will have now received additional documentation setting out the Applicant's position regarding the Wiltshire case (as mentioned at paragraph 7.14 of the updated report) so I will not repeat that here. The other reason for deferment was to investigate mechanisms to control the self-build element of the scheme. Unfortunately, the updated report at agenda item 4 does not make any reference to this so we felt it necessary to ensure that you were aware of the applicant's position in this regard. Please therefore be aware that the applicant submitted draft heads of terms for a legal agreement to the Council on the date of submission of this application. These can be found at appendix D of the originally submitted Planning Statement, and this is attached to this email for your convenience. The proposed use of a legal agreement is entirely appropriate and enforceable. This was the case in the Wiltshire appeal and the example at Appendix F to the Planning Statement, an earlier similar case to the Wiltshire example. I have also attached a further recent example of a legal agreement linked to a permission from Central Bedfordshire.

		We were incredibly disappointed with the officer comments at the previous meeting regarding the applicant's alleged future intentions, particularly given the detail already in the application with regard to the suggested legal agreement. We therefore trust that this email now provides you with the confidence that the type of homes to be provided are entirely controllable, and will meet the locational needs of those on the self-build register. I trust that the above provides a useful summary of our position in this regard. Thank you for your time on this matter. Best regards Mark Mark Godson MRTPI SF Planning Limited
243	7	**17/00201/FUL** **Green Lea, Green Street, Brockworth.** **Consultations & Representations:** Further objections received from owners of Hermit Cottage, **see attached in full below**.

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TO THE MEMBERS OF TEWKESBURY BOROUGH COUNCIL PLANNING COMMITTEE 31 AUGUST 2017

ITEM 17/00201/FUL GREEN LEA, GREEN STREET, BROCKWORTH

Dear Councillor

OBJECTION TO PROPOSED ERECTION OF 'GARDEN ROOM'

We are so concerned about this proposal that I have come back from my holiday in Devon to speak to you today.

This is the third of a series of applications designed to get a large house on this site. It is submitted by Sherry Moore's brother who does not live there but has a financial interest. In January 2016 they applied for a large house partly tucked behind our garage, this had to be substantially reduced in size and moved away before permission was granted in August 2016. In March 2017 they gained permission without our knowledge for it to be made longer, higher and turned round so that the sitting room would be next to the proposed 'garden room'. This current application is called a 'garden room' but is clearly intended to form part of a larger house in the future, which has already been applied for and rejected.

We object to its location right up against and below our garage in order to line up its walls and floor level exactly with the dwelling approved last year. There is no other reason for putting it there and that position will create many problems.

Hermit Cottage is a beautiful 400 year-old cottage, typical of the original cottages of Green Street. It is part of the character of the area ie semi rural and well spaced out. The proposal would crowd it and would make the area look a cluttered mess. It was a key principle of the permission for the new dwelling that it should be visually separate from Hermit Cottage – it was moved further away for that reason. This proposal would destroy that principle because even though at the moment there is a small parallel gap between its walls and the new dwelling, when viewed from any other angle than head on, it would look like one mass merging with our garage. The gap between the new house and this proposal is so small that it's meaningless.

Spoiling the appearance of Hermit Cottage hugely affects our amenity – it is deeply upsetting because we have taken great care to replace windows etc in character. We have not done any extensions ourselves because we felt it would damage the character. Creating a large property half hiding behind our garage would destroy that because being able to see space either side as you can with all the other nearby properties is essential to the character of the street and how Hermit Cottage in particular is viewed.

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Hermit Cottage and garage

The ground here is unstable. Our garage would be de-stabilised by digging down 3m at a distance of less that 2m from it. We are very concerned this will have a knock on impact on Hermit Cottage which has no foundations - once it is destabilised as many nearby cottages have been - it is too late. This very serious issue can only be addressed by moving the proposal further away.

Our security would be threatened by moving footpath as would be necessary, it would become a dark and dangerous passage allowing concealed access over the fence to our outhouse and back garden. This is a real concern to us given the recent attempted break-ins to our and neighbouring homes. GCC has said that an application must be made to TBC for the footpath to be diverted (see attached e-mail). This has not been done.

The current screen of trees will need to be destroyed and there will be no space to replace it if the garden room were to be so close. This would affect our privacy as people would be able to look over the fence into our back garden.

Noise from the heat pump is a significant concern to us and to other neighbours. These pumps are known to be noisy, operate at night and get worse with age. The application can't be approved until the noise data is submitted. It has not been, there is no specification.

Unfortunately, you can't rely on the facts given in this application – there are several incorrect statements ie that the footpath won't need to be diverted, that there will be screening and that there isn't a water main underneath the site. All are contrary to the facts including evidence provided by Severn Trent Development Services (see enclosed map). Be in no doubt that they intend to submit another application to join up this 'room'. This is why we have no confidence in what is said and we are very worried about where this will stop. Therefore we ask the Planning Committee to look at the impact of this development as a whole. Although you are just considering the garden room today the overall impact has to be important to your judgement about whether to accept it. For this reason we consider it is essential that you make a site visit before making your decision.

If this is not intended to be an extension then why put it there? It would be much easier to build and more appropriate further down the garden. Please refuse the application because the only way of dealing with all the above issues is to move it further away from Hermit Cottage.

Yours sincerely

Elizabeth and Geoff Cave

Appendix 1
E-mail from Gloucestershire Highways Department

From: "Tyler, Martine" <Martine.Tyler@amey.co.uk>
Date: 15 June 2017 at 13:04:32 BST
To: Geoff Cave [redacted]
Cc: "Soule, Ian" <Ian.Soule@amey.co.uk>
Subject: RE: Footpath - proposed change of route Green Street Brockworth GL3 4RT : Ref. 11142860

Dear Geoff

I had a query a couple of months ago about this one and as I recall it will be dealt with by Tewkesbury Borough Council under the Town and country Planning Act 1990 S257. I have had a look at the application on the Tewkesbury planning website and it is interesting that in the application the box for whether or not a public right of way is affected has been ticked as no, but the plan clearly shows the path diverted against the fence. I have not received any notification from Tewkesbury Borough Council that the owners have applied to divert the path.

I have just spoken with the planning officer at TBC, Fiona Martin, and advised her that the owners of Greenlea will need to apply to them as the Planning Authority to have this path diverted. When this is at the "made order" stage you will then have an opportunity to make a formal objection.

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Kind regards.

Martine Tyler

-----Original Message-----
From: Geoff Cave [redacted]
Sent: 15 June 2017 11:10
To: Tyler, Martine
Subject: Footpath - proposed change of route Green Street Brockworth GL3 4RT : Ref. 11142860

Dear Martine
Ian Souel referred me to you about the proposed re routing of a footpath that leads from Green Street through the garden of Green Lea, which is next to our property Hermit Cottage.
The owners of Green Lea propose to change the footpath so that it follows our boundary in order that they can enlarge their proposed development.

We strongly object to this change of the footpath. It will have to go down a steep slope, turn through two sharp right angle corners tight against the rear wall of our garage. The path will be elevated above the new development, it's construction will undermine our garage potentially creating a hazardous situation. It will also remove the current trees that form a screen between our property and Green Lea. The path will hidden from the road, with a high fence, create a dark passage, it can present an unsafe and insecure situation for people and property. These issues could discourage the usage of the path. There have been several thefts and attempted break ins from the rear of our property and properties in our immediate vicinity.

Please contact me on [redacted] or [redacted] to discuss our objections and advise how we formalise them they have been given to Tewkesbury Planning.

Regards
Geoff Cave

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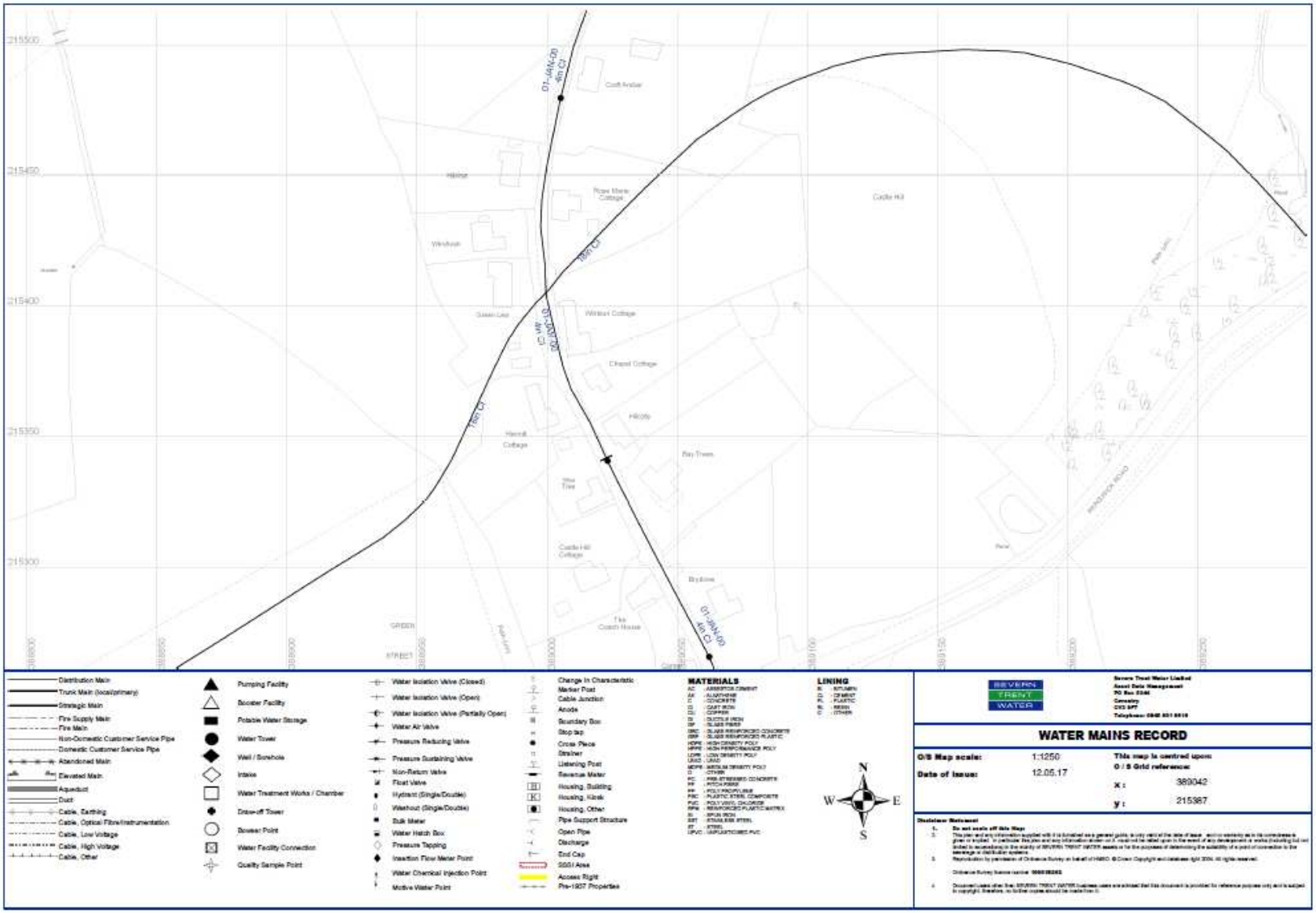

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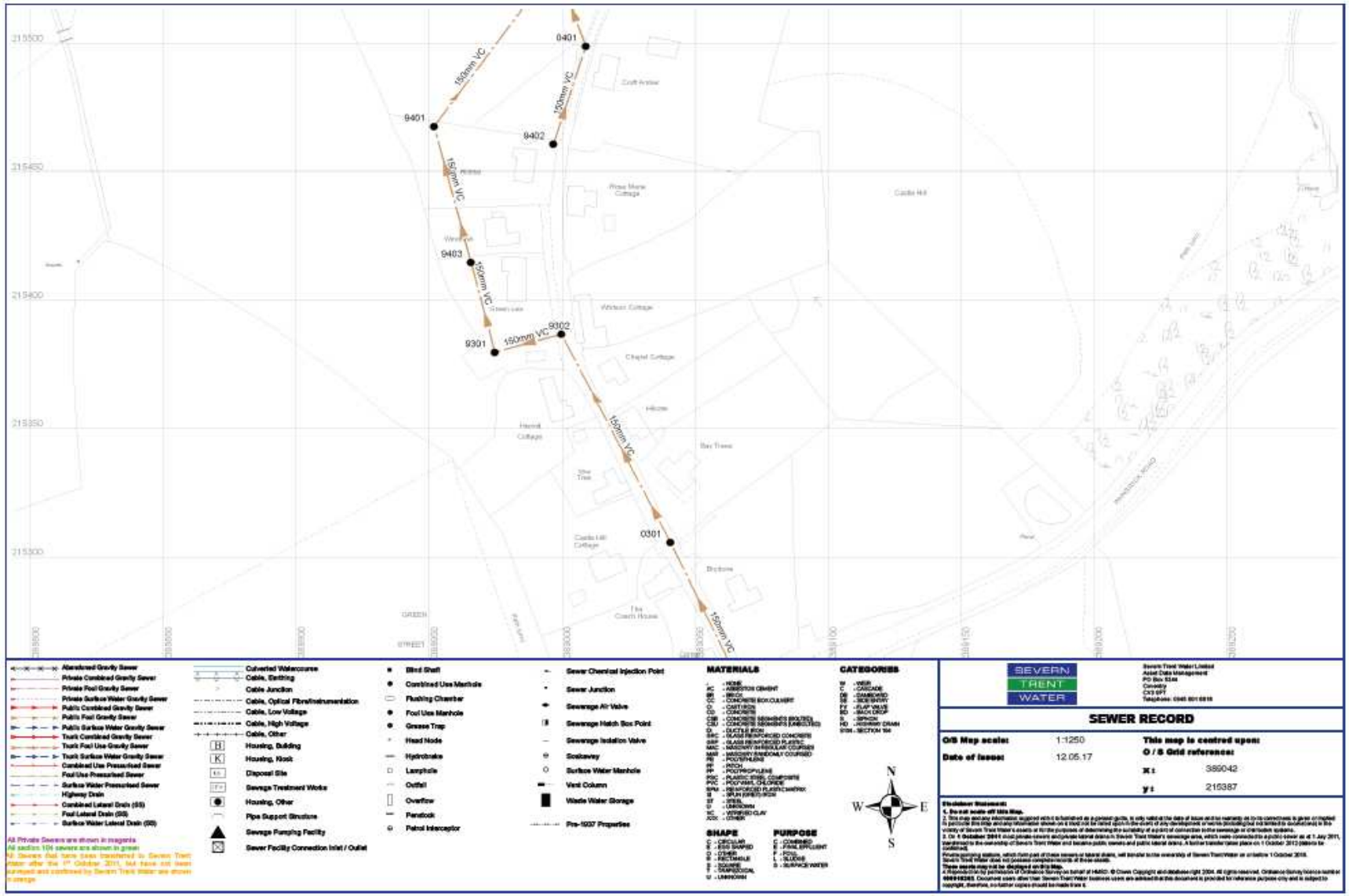

TEWKESBURY BOROUGH COUNCIL

Report to:	Planning Committee
Date of Meeting:	26 September 2017
Subject:	Flood and Water Management Supplementary Planning Document
Report of:	Annette Roberts, Head of Development Services
Corporate Lead:	Robert Weaver, Deputy Chief Executive
Lead Member:	Lead Member for Built Environment
Number of Appendices:	Two

Executive Summary:

In November 2014, Council approved the adoption of a Flood and Water Management Supplementary Planning Document (SPD). Since adoption, however, there have been significant updates to national guidance surrounding flood and water management. A review of the SPD has therefore been undertaken to take into account the latest guidance and an updated draft SPD has been prepared. This is attached at Appendix 1 to this report with the appendices to the SPD attached at Appendix 1a. Executive Committee approved the document for public consultation on 30 August 2017. The Planning Committee is asked for its comments on the SPD.

Recommendation:

To consider and comment on the Flood and Water Management Supplementary Planning Document, set out in Appendix 1 and 1a, as part of the consultation process.

Reasons for Recommendation:

To provide an opportunity for the Planning Committee to respond to the public consultation on the draft Flood and Water Management Supplementary Planning Document.

Resource Implications:

Resource implication on officer time to conduct the consultation, review responses and make amendments as appropriate.

Legal Implications:

The preparation of an SPD is not a statutory requirement, but a decision for each local planning authority based upon demands for further information to assist in the delivery of sustainable development. An SPD cannot in itself establish planning policy; it must be consistent with national and local planning policies. Before a local planning authority can adopt an SPD it must carry out formal public consultation, accompanied by the provision of a Consultation Statement setting out who was consulted in the preparation of the SPD; a summary of the issues raised; and how those issues have been addressed. Once adopted, the SPD would be a material consideration in the determination of planning applications. A planning authority can adopt an SPD either as originally prepared or as modified to take account of any representations made in relation to the SPD or any other matter they think is relevant.

Risk Management Implications:

There is no statutory requirement to prepare SPDs. However, it is considered to be important that Tewkesbury Borough has appropriate planning policies for flood and water management to ensure that development does not exacerbate flood risk and opportunites for betterment are sought.

Performance Management Follow-up:

Subject to the approval of the SPD for public consultation, and following a rewiew of the representations made, a final version of the SPD will be reported back to Council with a view to adoption.

Environmental Implications:

The SPD contains further detail and advice in relation to the emerging JCS and Tewkesbury Borough Plan policies on environmental issues such as flood risk, water management, pollution and biodiversity.

1.0 INTRODUCTION/BACKGROUND

1.1 In November 2014, Council approved the adoption of a Flood and Water Management Supplementary Planning Document (SPD). The final version of the SPD, published in December 2014, has since been used as a material consideration in determining planning applications.

1.2 This SPD was established to provide a user-friendly guide to assist applicants in making better planning applications; to aid infrastructure delivery; and to help the general public and other stakeholders to gain a better understanding of the Council's commitment to minimising flood risk. It is to be read in conjunction with other national and local planning policies and guidance, such as the National Planning Policy Framework and the Joint Core Strategy.

1.3 Since adoption, however, there have been significant updates to national guidance surrounding flood and water management. This includes revisions to policy and guidance provided in the National Planning Policy Framework (NPPF) and National Planning Policy Guidance (NPPG), changes to recommendations by the Environment Agency, and updated guidance on best practice. Key changes have included the Environment Agency requirements for taking into account of climate change and updated CIRIA guidance on Sustainable Urban Drainage Systems (SuDS). These changes have meant it is necessary to update the SPD to reflect the most recent practice to ensure it remains relevant and effective.

2.0 REVIEW OF SUPPLEMENTARY PLANNING DOCUMENT

2.1 A review of the SPD has been undertaken to take account of the latest guidance and an updated draft SPD has been prepared. This is attached at Appendix 1 to this report. A series of supporting appendices accompany the SPD and are attached at Appendix 1a. The format of the SPD itself has largely stayed the same and the document contains the following sections:

1. Introduction and Objectives.
2. Setting the Local Context.
3. Legislative and Policy Background.
4. The Importance of Pre-Application Advice.
5. Flood Risk and Site Selection.
6. Managing and Mitigating Flood Risk.
7. Sustainable Drainage Systems.
8. Water Management, Recycling, Supply and Pollution Control.
9. Water Management Statements.
10. Biodiviersity.

2.2 The updated SPD is a more detailed document that aims to provide in-depth guidance and achieve a higher standard of water and flood risk management. It provides an up date on the legislative and policy background, primarily around the NPPF and NPPG which most notably includes changing guidance around the approach to climate change. As such, a key change included in the SPD is a requirement for all major development to provide a detailed flood risk assessment which includes a 70% allowance added to peak river flows to account for climate change. This approach is also recommended for non-major development where possible. This provides a precautionary approach to assessing flood risk on potential development sites.

2.3 The draft SPD also now proposes a comprehensive guidance on the application of SuDS, referring to the best practice guidance from the CIRIA SuDS Manual. It provides guidelines on topics such as SuDS design principles, place-making, surface water management, water reuse and maintenance.

3.0 CONSULTATION

3.1 The Draft SPD was approved by Executive Committee for public consultation on 30 August 2017. The draft SPD will be published for a 6 week consultation in September/October 2017. Following the consultation period, a response consultation report will be produced and any appropriate amendments made to the SPD. It is envisaged that the final draft of the SPD would be reported to the Executive Committee and Council later in 2017.

4.0 RELEVANT COUNCIL POLICIES/STRATEGIES

4.1 Flood and Water Management SPD (Nov 2014).

Tewkesbury Borough Local Plan to 2011.

Joint Core Strategy.

Emerging Tewkesbury Borough Plan (2011-2031).

5.0 RELEVANT GOVERNMENT POLICIES

5.1 National Planning Policy Framework.

National Planning Practice Guidance.

6.0 RESOURCE IMPLICATIONS (Human/Property)

6.1 Resource implication on officer time to conduct the consultation, review responses and make an amendments as appropriate.

7.0 SUSTAINABILITY IMPLICATIONS (Social/Community Safety/Cultural/ Economic/ Environment)

7.1 The preparation of the Flood and Water Management SPD provides an opportunity for greater flood risk management that could have a positive impact in terms of helping to bring forward more sustainable forms of development.

8.0 IMPACT UPON (Value For Money/Equalities/E-Government/Human Rights/Health And Safety)

8.1 None.

9.0 RELATED DECISIONS AND ANY OTHER RELEVANT FACTS

9.1 None.

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Appendices: 1 – Draft Flood and Water Management Supplementary Planning Document

Flood and Water Management

Supplementary Planning Document

Tewkesbury Borough Council

Consultation Draft

September 2017

CONTENTS

CHAPTER 1 – INTRODUCTION AND OBJECTIVES

1.1 Flood events have had a detrimental effect on the social, economic and environmental wellbeing of the country. Parts of Tewkesbury Borough in particular have suffered from the effects of flooding in recent times, largely due to its proximity to the Severn and Avon Rivers.

1.2 All forms of flooding and their impact on the natural and built environment are material planning considerations that are taken into account when determining planning applications. Tewkesbury Borough Council expects an integrated approach to flood risk and water cycle management (including rainwater, storm water, sewage, ground water, surface water and recycled water) to secure a range of social, economic and environmental benefits. Consequently, there is a need for a comprehensive approach to dealing with flood risk and the aim of Tewkesbury Borough Council is to ensure that this matter is properly considered at the very earliest, and all subsequent, stages of the planning process.

1.3 This document is a material consideration when considering planning applications. It should be read in conjunction with national and local planning policies and guidance (see Chapter 3 below). In accordance with these; Tewkesbury Borough Council will always seek opportunities to reduce the overall level of flood risk in the area and beyond. It will also seek to maximise amenity, biodiversity and water quality benefits, as well as those opportunities and benefits which can be obtained from effective flood and water management.

1.4 The aim of this SPD is to provide guidance on the approach that should be taken to manage flood risk and the water environment as part of new development proposals. The SPD highlights the documents which will be required to accompany planning applications, including:

- Sequential Test, and where appropriate Exception Test, reports
- Site Specific Flood Risk Assessments (FRA's) and Drainage Strategies (incorporating the approach to surface water drainage and suitability evidence)

1.5 The key flood and water management objectives of Tewkesbury Borough Council are summarised as follows:-

Key Objectives

1. **To steer new development to areas with the lowest probability of flooding.**
2. **To ensure that new development does not increase the risk of flooding either on a site or cumulatively elsewhere; and to always seek betterment over the bare minimum requirements, wherever possible.**
3. **To require the inclusion of effectively designed Sustainable Drainage Systems (SuDS) within new developments which mimic natural drainage as closely as possible, with the provision for their long-term maintenance, in order to sustainably mitigate the risk of flooding.**
4. **To ensure that development incorporates appropriate water management techniques which improves the existing hydrological conditions and maximises the opportunities and benefits of betterment of water quantity, water quality, biodiversity and amenity.**
5. **To ensure on-site storage capacity for surface water attenuation for storm events up to the 1% probability event (1 in 100 years) including allowance for climate change.**
6. **Encourage the use of water efficient and recycling devices within new developments.**

1.7 There is an emerging policy framework within the Joint Core Strategy (JCS) and Tewkesbury Borough Plan, which will include policies relating to flood risk and water management. Policy INF3 of the emerging JCS specifically relates to flood and water management issues. This SPD provides additional information to supplement this emerging policy, as well as those in the emerging Tewkesbury Borough Plan and the existing 'saved'

policies contained within the Tewkesbury Borough Local Plan to 2011. Early use of this document by applicants in the design process is therefore essential.

How to Use This Supplementary Planning Document.

1.8 To ensure that Tewkesbury Borough has a consistent and appropriate approach to flood risk and water management, this SPD should be used by:-

- Developers and applicants when considering sites for development.
- Developers and applicants when preparing the brief for their design team to ensure drainage and water management systems are sustainably designed.
- Consultants when carrying out site-specific flood risk assessments.
- Design teams preparing master plans, landscape and surface water drainage schemes and assessments.
- Development management officers and their specialist consultees when determining delegated planning applications, selecting appropriate planning conditions, making recommendations to committees and drawing up section 106 obligations that include contributions for suds.
- Other interested parties (e.g. local members) who wish to better understand the interaction between development, flooding and drainage issues.
- Developers and applicants in designing future maintenance regimen for the life time of the development

1.9 This SPD is set within the context of a water flood risk management hierarchy to help developers and decision-makers understand flood and water management and to embed it in decision-making at all levels of the planning process.

1.10 The flood risk management hierarchy.

Assess		Avoid		Substitute		Control		Mitigate
Appropriate flood risk assessment	▶	Apply the sequential test to the site location	▶	Apply the sequential approach at site level	▶	E.g. suds design, flood defences, etc	▶	E.g. flood resilient construction

1.11 This SPD addresses the flood and water management issues associated with development within the Tewkesbury Borough context. It should however be understood that the design of drainage systems and water features is dependent on a number of constraints such as existing ground conditions, including site contamination levels. This SPD does not provide detailed information in relation to groundwater contamination or remediation measures.

1.12 Neither does this SPD provide a comprehensive guide on all other development related issues. There is a wide range of other guidance available as part of the national planning policy, and from various sources, for other matters.

CHAPTER 2 – SETTING THE LOCAL CONTEXT

2.1 Tewkesbury Borough is heavily influenced by the Severn and Avon Rivers, which run through the district. These rivers pose the greatest flood risk particularly during periods of high flows at the place where the two watercourses meet at Tewkesbury town. A considerable amount of land to the western side of the Borough comprises the functional flood plain and the majority of the borough area drains into the Severn. Flooding from surface water is also a problem as drainage is closely linked to main river levels, with the largely impermeable geology and generally gentle topography of the Borough contributing to increased likelihood of surface water flooding.

2.2 Tewkesbury Borough has suffered from numerous severe flooding events in its history, one of the most notable of which was in the summer of 2007.

Case Study

The summer of 2007 was one of the wettest on record.

Following a very dry April, Gloucestershire experienced heavy rainfall in June. This overloaded the county's drainage systems through a combination of the influx of surface water and very high water levels in main rivers and brooks and lead to some localised flooding across the county.

During July however the rains were even heavier. On 20th July, two months' worth of rain fell in just 14 hours. This ultimately resulted in two emergencies; widespread flooding and water shortages. The water shortage occurred due to the Severn Trent Water Treatment Works in Tewkesbury being contaminated with flood water.

With flood water reaching depths of over two metres in some places, across Gloucestershire over half of all homes and 7,500 businesses were without any mains water for up to 12 days and without drinking water for 17 days. Electricity was lost to 48,000 homes for two days. Within Tewkesbury borough over 1800 homes were directly affected by the floods.

The effects of global climate change are likely to result in more occurrences of extreme weather events and resultant flooding in the future.

With the need for significant levels of new housing and employment development within the Borough, which is emerging through the Joint Core Strategy, it is imperative that issues associated with water management are identified and subsequently tackled if

existing problems are not to be exacerbated, along with the associated negative social, environmental and economic impacts. Key issues to be tackled include: the location and design of existing and future development; flood risk management; design and maintenance of flood risk management infrastructure; future water resource needs; water supply and sewerage.

2.3 Tewkesbury Borough Council will always seek to manage, and reduce flood risk through the development management process.

2.4 As flood risk is determined by activity within the wider hydrological catchment, the consideration of flood risk should not be limited to the Local Authority area alone. Risks to and from neighbouring local authority areas should also be considered where appropriate.

CHAPTER 3 - LEGISLATIVE AND POLICY BACKGROUND

3.1 There are a number of legislative and policy considerations that have been taken into account in the preparation of this SPD, and which must also be taken into account when submitting a planning application. These considerations are summarised as:

LEGISLATION

3.2 European Legislation

The Floods Directive

3.2.1 **The EU Floods Directive - 2007/60/EC** came into force due to a need for European Union countries (member states) to better understand and gather accurate data about the risks from surface water flooding. In the UK the Directive came into force via the Flood Risk Regulations 2009 which in turn sets the requirement for Preliminary Flood Risk Assessments (PFRA) to be produced by all unitary and county councils.

The Water Framework Directive

3.2.2 **The Water Framework Directive – 2000/60/EC (WFD)** was enacted into UK law in December 2003. This legislation requires member states to make plans to protect and improve the water environment. In summary, the Directive aims to protect and prevent the deterioration of aquatic ecosystems; conserve habitats and species that depend directly on water; reduce the release of individual pollutants that present a significant threat to the aquatic environment; reduce the pollution of groundwater and prevent or limit the entry of pollutants; and help reduce the effects of floods and droughts.

3.3 National legislation

The Flood and Water Management Act (FWMA) 2010

3.3.1 **The Flood and Water Management Act 2010** (FWMA) has brought about significant legislative changes to the management of flood risk and water. Gloucestershire County Council (GCC) has been established as a Lead Local Flood Authority (LLFA) with responsibility for managing local flood risk from surface runoff, ordinary watercourses and groundwater in the area. GCC has a responsibility to produce a Local Flood Risk

Management Strategy, and they also have powers and duties to issue consents for works on ordinary watercourses and undertake enforcement activities.

3.3.2 The FWMA also seeks to encourage the uptake of Sustainable Drainage Systems (SuDS) by agreeing new approaches to the management of drainage systems. This new approach seeks to deliver sustainable drainage systems by strengthening of current planning policy.

PLANNING POLICY

3.4 National Planning Policy Framework (NPPF)

3.4.1 In March 2012 Government published the **National Planning Policy Framework (NPPF)** which sets out Government planning policy in England. The framework replaced many of the previous Planning Policy Guidance (PPG) or Planning Policy Statements (PPS), including PPS25: Development and Flood Risk. However, the accompanying planning practice guidance to the NPPF retains key elements of PPS25 and its associated Practice Guide.

3.4.2 At the heart of the NPPF is the presumption in favour of sustainable development, which is described as 'a golden thread running through both plan-making and decision-taking.' Sustainable development comprises three dimensions; economic, social and environmental and these should not be treated in isolation as they are mutually dependent. To achieve sustainable development, economic, social and environmental gains should be sought simultaneously through the planning system.

3.4.3 Flood risk and water management falls within Section 10: 'Meeting the challenge of climate change, flooding and coastal change' and one of the core planning principles of the framework is that planning should take full account of flood risk. Furthermore, the framework sets out the government's intention that planning authorities should adopt proactive strategies to mitigate and adapt to climate change.

3.4.4 Solely as a starting point, the flood risk assessment climate change allowance guidance on the gov.uk website can be reviewed. Extracts from which are included below:

Table 1 peak river flow allowances by river basin district (use 1961 to 1990 baseline)

River basin district	Allowance category	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Thames	Upper end	25%	35%	70%
	Higher central	15%	25%	35%
	Central	10%	15%	25%
Severn	Upper end	25%	40%	70%
	Higher central	15%	25%	35%
	Central	10%	20%	25%

Using peak river flow allowances for flood risk assessments

Consider the appropriate flood risk vulnerability classification to decide which allowances apply to your development or plan. This will help you understand the range of impact. The higher central, central, and upper end allowances are in table 1. Whilst the majority of the Borough is within the Severn River Basin District there is a small area to the east of the Borough within the Thames District. Please refer to the EA's River Basin District Map to identify the relevant district for your site.

Table 2 shows anticipated changes in extreme rainfall intensity in small and urban catchments. For flood risk assessments and strategic flood risk assessments, assess both the central and upper end allowances to understand the range of impact.

Table 2 peak rainfall intensity allowance in small and urban catchments (use 1961 to 1990 baseline)

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper end	10%	20%	40%

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Central	5%	10%	20%

Table 3 sea level allowance for each epoch in millimetres (mm) per year with cumulative sea level rise for each epoch in brackets (use 1990 baseline)

Area of England	1990 to 2025	2026 to 2055	2056 to 2085	2086 to 2115	Cumulative rise 1990 to 2115 / metres (m)
South West	3.5 (122.5 mm)	8 (240 mm)	11.5 (345 mm)	14.5 (435 mm)	1.14 m

For further guidance on the application of climate changes allowances please refer to the EA's local area advice on Climate Change Allowances for Planning at Appendix V of this document.

Whilst the majority of Tewkesbury Borough Council area is not directly affected by Tidal flooding, the increase in sea level may have an impact on parts of the Borough and will therefore need to be taken into account.

The NPPF and its associated **Planning Practice Guidance** is an important consideration in the decision making process.

3.4.5 The framework indicates that local plans and planning applications should both ensure that flood risk, including surface water flooding, is not increased as a result of development and that development proposals should only be permitted in areas at risk of flooding, where it can be demonstrated that:

- a site specific flood risk assessment has been undertaken which follows the Sequential Test, and if required, passes the Exception Test;
- within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location;
- development is appropriately flood resilient and resistant, including safe access and escape routes where required;
- that any residual risk can be safely managed, including by emergency planning; and
- the site gives priority to the use of sustainable drainage systems.
- The framework also indicates that local plans should use opportunities offered by new developments to reduce flood risk elsewhere.

3.4.6 Sustainable Drainage Systems: Written Ministerial Statement

On 18th December 2014, a ministerial statement was made by the Secretary of State for Communities and Local Government (Mr Eric Pickles). The statement has placed an expectation on local planning policies and decisions on planning applications relating to major development to ensure that SuDS are put in place for management of runoff, unless demonstrated to be inappropriate. The statement made reference to revised planning guidance to support local planning authorities in implementing the changes and on 23rd March 2015, the Department for Environment Food and Rural Affairs (Defra) published the "Non Statutory Technical Standards for Sustainable Drainage Systems"

3.5 Local Planning Policy

The Tewkesbury Borough Local Plan to 2011 – March 2006

3.5.1 **The Tewkesbury Borough Local Plan to 2011** was adopted in March 2006. In accordance with paragraph 215 of the NPPF, due weight should be given to relevant 'saved' policies in the local plan according to their degree of consistency with this framework (the closer the policies in the plan to the policies in the framework, the greater the weight that may be given). Planning law makes it clear that planning applications should be determined in accordance with the development plan, unless material considerations indicate otherwise. The local plan therefore remains the starting point for decision making.

3.5.2 The following local plan policies are relevant to flood risk and water management and should be taken into account when you are thinking of submitting a planning application:-

3.5.3 **Policy EVT5** states that within areas with a high flood risk, and low to medium flood risk and outside these areas if required by the environment agency, proposals for development must be accompanied by a Flood Risk Assessment. Development will only be permitted provided that the proposed development has been demonstrated to meet a number of criteria in respect of flood protection.

3.5.4 **Policy EVT9** relates to Sustainable Urban Drainage Systems (SUDS) and states that development proposals must demonstrate that appropriate provision has been made for the on-site attenuation and treatment of surface water run-off. Further comprehensive guidance on the design, maintenance and adoption of SuDS is available within the SuDS Manual (CIRIA, C753)

3.5.5 Tewkesbury Borough Council considers that these policies are consistent with the NPPF and therefore should be afforded significant weight in the consideration of planning applications in accordance with paragraph 215 of the NPPF.

The emerging Joint Core Strategy

3.5.6 **The Joint Core Strategy (JCS)** is a strategic development plan document that is being prepared through a partnership between Gloucester City Council, Cheltenham Borough Council and Tewkesbury Borough Council. The JCS will provide a co-ordinated strategic plan for this joint administrative area during the period up to 2031. Whilst not yet adopted, the JCS has an extensive and up to date evidence base, including Strategic Flood Risk Assessments which provide a detailed assessment of multiple flood sources for specific broad locations within the JCS area.

The emerging Tewkesbury Borough Plan

3.5.7 Whilst the JCS will provide the strategic level policies for development in the area, this will be supplemented at individual district level by locally specific plans. In Tewkesbury Borough, the council has begun preparation of the **Tewkesbury Borough Plan**, which is at a relatively early stage of preparation at the time of the publication of this SPD.

CHAPTER 4 - THE IMPORTANCE OF PRE-APPLICATION ADVICE

4.1 The Council encourages early discussions in relation to development proposals. Developers are strongly advised to use the Council's **pre-planning application advice service** to discuss any potential issues that may arise from development proposals. There is also an expectation that developers seek early engagement with local communities and relevant organisations on their development proposals.

4.2 Seeking pre-application advice may help applicants to address issues such as:

- Whether the proposed development is acceptable in principle and thus warranting further investigations in respect of flooding and drainage
- Whether a Flood Risk Assessment (FRA) needs to be submitted and, if so, what is the required scope of the assessment?;
- Confirmation of whether the Sequential and/or Exceptions Tests need to be applied, and advice on how to undertake the tests appropriately;
- Advice on the most appropriate form of sustainable drainage measures for a site;
- Whether there are any known contamination issues on the site which could affect site design and layout and the types of SuDS used?
- Agreeing the discharge points for site drainage with the LPA and relevant RMA;
- Obtain any relevant data needed in order to prepare the site specific FRA and drainage strategy.

4.3 The Council will, if necessary, seek the technical advice and views of the following Flood Risk Management Authorities (FRMA) when providing pre-application advice to applicants and determining subsequent planning applications:-

Environment Agency

4.4 **The Environment Agency** (EA) is a public body that has responsibilities for protecting and enhancing the environment as a whole and contributing to the government's aim of achieving sustainable development. The EA are a statutory consultee and provide bespoke advice on certain planning applications in Flood Zones 2 and 3 and on sites in Flood Zone 1 which have critical drainage problems (as notified to the local planning authority by the Environment Agency). The EA do however apply standing advice to a wide range of development proposals. For the EA's local level consultation filter, flood risk matrix and

standing advice please refer to APPENDIX V. The consultation filter should be used to identify when the EA should be consulted and the flood risk matrix to identify when standing advice applies and which standing advice note to refer to. In providing pre-application advice the Council will refer to the EA's standing advice where applicable. **It should be noted however that the EA operate charges for providing bespoke pre-application advice (i.e. in situations where standing advice does not apply) and in such circumstances the Council is unable to consult the EA as part of its own pre-application advice service. Applicants are therefore expected to obtain pre-application advice from the EA on a separate basis.**

Severn Trent Water

4.5 **Severn Trent Water** (STW) has the responsibility to maintain foul, surface and combined public sewers in Tewkesbury Borough so that they can effectively drain the area. STW ensures that the public sewer system has the capacity to accept flows from new developments. To provide the necessary capacity STW may require planning conditions to be imposed on planning permissions requiring the delay of any connection to the sewerage system until the additional capacity to accommodate the development is provided. STW will be a statutory consultee on future developments.

Lead Local Flood Authority (Gloucestershire County Council)

4.6 The 2010 FWMA establishes **Gloucestershire County Council** as Lead Local Flood Authority (LLFA). As Lead Local Flood Authority, it has responsibility for managing local flood risk from surface runoff, ordinary watercourses and groundwater in the area and is a statutory consultee. Gloucestershire County Council is also the Local Highway Authority, and in this regard it is responsible for road construction and highway drainage consents.

Lower Severn Internal Drainage Board (IDB)

4.7 IDBs are local public authorities that manage water levels. They are an integral part of managing flood risk and land drainage within areas of special drainage need in England and Wales. IDBs have permissive powers to undertake work to provide water level management within their Internal Drainage District. They undertake works to reduce flood risk to people and property and manage water levels for local needs. Much of their work involves the maintenance of rivers, drainage channels, outfalls and pumping stations, facilitating drainage of new developments and advising on planning applications. They also have statutory duties with regard to the environment and recreation when exercising their permissive powers. IDBs input into the planning system by facilitating the drainage of new

and existing developments within their districts and advising on planning applications; however they are not a statutory consultee to the planning process.

Planning Application Requirements

4.8 Pre-application advice will help applicants to understand the issues relating to their proposal by the time a planning application is submitted. However, it is also important that all the correct information is submitted to ensure applications can be validated and determined efficiently. The Council's **validation checklists** set out the requirements.

CHAPTER 5 - FLOOD RISK AND SITE SELECTION

5.1 Introduction

5.1.1 Development in areas at risk of flooding should be avoided. Flood risk includes risk from all sources of flooding, including from:

- rivers (fluvial)
- tidal and coastal flooding;
- rainfall surface water (pluvial);
- overwhelmed sewers and drainage systems;
- groundwater; and
- from reservoirs, canals and lakes.

Where development is necessary, it should be safe and should not increase flood risk elsewhere.

5.1.2 Flood risk is an expression of the combination of the flood probability (how likely the event will happen) and the magnitude of the potential consequences (the impact such as economic, social or environmental damage) of the flood event.

5.1.3 The likelihood or risk of flooding can be expressed in two ways:

Chance of flooding: As a percentage chance of flooding each year. For example, for Flood Zone 3a there may be a 5% annual probability of this area flooding

Return period: This term is used to express the frequency of flood events. It refers to the estimated average time interval between events of a given magnitude. For example, for Flood Zone 3a the return period could be expressed as 1 in 20 year

5.1.4 There is however a move away from using return periods as an expression of flood risk as this approach does not accurately express the risk of flooding. For example, it is misleading to say that a 1 in 100 year flood will only occur once in every hundred years. This suggests that if it occurs in one year then it should not be expected to reoccur again for another 100 years; however this is not the case. The percentage chance of flooding each year, often referred to as **annual probability**, is now the preferred method of expressing flood risk.

5.1.5 Fluvial flooding is divided into flood zones based on the risk of flooding:

Figure 5.1: Fluvial Flood Risk Zones

Flood Zone	Definition
Zone 1 - Low Probability	Land having a less than a 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 - Medium Probability	Land having between a 1% and a 0.1% annual probability of river flooding; or Land having between a 0.5% and a 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a - High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b - The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. LPAs should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the EA. (Not separately distinguished from Zone 3a on the Flood Map)

5.1.6 Maps showing Flood Zones are available on the gov.uk website. Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. Table 4.1 details the Flood Zones and their definitions taken from the PPG. It should be noted that the EA's flood map is indicative only and doesn't cover the entire Borough. For example, flood risk associated with smaller watercourses with a catchment of less than 3 km^2 does not necessarily feature on the EA flood map. This does not however mean that there is not a risk of flooding associated with these watercourses. Other sources of flood mapping are available which may provide more robust and extensive information. These may include

the Level 2 SFRA for the JCS area and GCC's SFRA mapping. Individual site specific hydraulic modelling may also be required in some instances to establish the flood risk on a site.

5.1.7 To cope with the potential risks and forecasts of climate change (predicted 1.14m rise in sea levels in the South West of England, warmer summers, wetter winters and increased river flows by 2115) and to ensure that new development is safe for its lifetime, the Government has emphasised that development in areas at risk of flooding should be avoided by directing development away from the highest risk areas. Where development is necessary it should be made safe without increasing flood risk elsewhere. Please see the DEFRA/ EA publication 'Flood Risks to People' for further information on what is considered 'safe'.

5.1.8 All proposals should therefore follow a Sequential Approach to flood risk. This means relevant development will be directed to the areas at the lowest risk of flooding at a strategic, local and site-scale level. It will be necessary to consider flooding from all sources: the sea (tidal), rivers (fluvial), surface water (pluvial) and ground water, and a possible combination of all of these. Further detail on the Sequential Test is provided below.

5.1.9 The design flood with annual probability of 1% flood level fluvial, or 0.5% tidal, plus climate change allowance should be used to inform the sequential approach , including appropriate location of built development; consideration of flood risk impacts, mitigation/enhancement and ensure 'safe' development.

5.2 Site Vulnerability

The general approach to flood risk and planning is to ensure that where possible, development is located in the areas of lowest flood risk and this approach can be applied at various levels i.e. strategic scale, individual site scale and building scale to ensure the most vulnerable uses are located in the area of lowest flood risk

5.2.1 Therefore it is necessary to identify how 'vulnerable' the proposed development is using the vulnerability classification set out in Table 2 of the **Planning Practice Guidance**. This is important because different types of development are acceptable in different flood risk situations. In simple terms, the more vulnerable the development type is, the more important it is to locate it in areas of the lowest possible flood risk. The table in the

Planning Practice Guidance sets out in more detail what types of development can be located in which flood zone and categorises the developments into the following areas.

- Essential Infrastructure
- Highly Vulnerable
- More Vulnerable
- Less Vulnerable
- Water Compatible Development.

5.3 The Sequential Test

5.3.1 The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding with the Environment Agency's 'flood zone' maps normally being the starting point for any assessment. As set out in section 5.5, the local Strategic Flood Risk Assessment Level 2 mapping **(SFRA L2)** for the area can also be used in conjunction with the Environment Agency's maps to establish flood risk. Development should not be permitted if there are reasonably available sites in areas with a lower probability of flooding. The sequential approach is to be used in areas known to be at risk from flooding.

5.3.2 The overall aim is to steer new development to Flood Zone 1. Where there are no reasonably available sites in Flood Zone 1, Tewkesbury Borough Council will take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 where flood risk is minimal, applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.

In applying the sequential test to major developments Tewkesbury Borough Council will require the developer to provide information and if deemed necessary, request additional up to date modelling to demonstrate that the application takes account of changes both in climate change requirements and any actual recorded flooding events since the original Environment Agency modelling was carried out.

5.3.3 The sequential approach should also be applied within the application site itself by locating the most vulnerable elements of the development in the lowest flood risk areas in the first instance. The use of flood risk areas (i.e. Flood Zones 2, 3a and 3b) for recreation, amenity and environmental purposes can provide an effective means of flood risk management as well as providing connected green spaces with consequent social and

environmental benefits. Sequential test guidance can be found at **https://www.gov.uk/guidance/flood-risk-assessment-the-sequential-test-for-applicants.**

5.3.4 The Sequential Test does not need to be applied for:

- Individual developments on sites which have been allocated in development plans, as the Sequential Test process has already been undertaken (unless the Flood Zones for the site have changed);
- Minor development or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site); or
- Sites located wholly in Flood Zone 1

5.3.5 The definition of minor development for the purposes of the Sequential Test is:

- Minor non-residential extensions: industrial/commercial/leisure etc. extensions with a footprint less than 250 square metres;
- Alterations: development that does not increase the size of buildings e.g. alterations to external appearance;
- Householder development: for example sheds, garages, games rooms etc. within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling e.g. subdivision of houses into flats.

5.3.6 All sources of flood risk should be considered when assessing the need for the Sequential Test as well as undertaking the test.

5.3.7 The PPG requires a pragmatic approach to the Sequential Test and site availability and suggests that it might be impractical to suggest there are more suitable alternative sites in some circumstances. For example, it may be that proposals are submitted which involve the redevelopment of heritage assets where the benefits that would arise from bringing the buildings back into use cannot be provided by development on an alternative site.

5.3.8 The following sets out how applicants should undertake the Sequential Test for assessment by the LPA. This would normally take the form of the submission of a report commensurate in size to the scale of development proposed.

- The Applicant should agree with the LPA the geographical area over which the test is to be applied. This will normally be based on the circumstances and requirements of the proposed development in question. For example, where a large scale strategic

housing development is proposed it will normally be appropriate to consider the Borough as a whole, however where a small scale housing development meeting local needs is proposed the geographical area may be more refined and based on that local area. Furthermore, there may be situations where the functional requirements and objectives of the proposed development justify a refined catchment area (e.g. the catchment area for a school, community facilities and development within a regeneration zone).

- The relevant policies of the local plan should be the starting point to understand areas of local need. For uses that have a sub-regional, regional or national impact it may be appropriate to expand the area beyond the LPA boundary.

- The developer should identify and list reasonably available sites that meet the functional requirements of the application in question and are considered reasonably available and would be given planning permission for the proposed use. The Council's Strategic Assessment of Land Availability (SALA) provides a source of information on sites in the Borough that are available for development. It must however be noted that the identification of a potential site within the SALA does not imply that it is deliverable and developable and the council would grant planning permission for development. All alternative sites must still be in conformity with the Adopted Development Plan, the National Planning Policy Framework and its associated National Planning Practice Guidance. Other sources of alternative sites may include unimplemented site allocations within an adopted Development Plan Document and unimplemented planning pemissions (although permissions that are likely to be implemented are not considered to be reasonably available).

- The Developer should obtain the necessary flood risk information for all the sites. This should be from all available sources including the SFRA, the EA's Flood Zones maps, the EA's Areas Susceptible to Surface Water Flooding Maps, the British Geological Society Areas Susceptible to Groundwater Flooding Maps together with any other local flood risk knowledge.

- The Developer should apply the Sequential Test and compare the flood risk from all sources for the reasonably available sites to the original sites flood risk as set out in the site specific FRA to demonstrate if there are any reasonably available sites that have a lower flood risk, state how they compare regarding flood risk and any reasons why they are unsuitable or not available within the report.

- If the site is not within Flood Zone 1 are there any reasonably available sites in the area with a lower probability of flooding that would be appropriate to the type of development or land use proposed. If no, this does not mean that the proposed development is acceptable in flood risk terms as it may be necessary to apply the exception test as part of the site specific flood risk assessment.

- Reasonably available does not mean that the sites must be in the same ownership. Instead the Council will view reasonably available sites as those that are both 'deliverable' and 'developable' as defined by the NPPF (Para.47, footnotes 11-12). The Council does not necessarily accept however that to be 'deliverable' for the purposes of the Sequential Test an alternative site must have a realistic prospect of housing being delivered on it within the first five years. Instead, determining whether an alternative site is deliverable should be based on the likely delivery trajectory of the proposed development in question (for example where a very large, complex development is proposed and it is unlikely that the site would deliver within the first five years, it is inappropriate to only consider alternative sites that can deliver within five years). Furthermore, for non-residential developments delivery timeframes may not be as important a consideration. The deliverability of alternative sites will therefore be considered on a case by case basis. In addition, reasonably available sites should:

  1. Lie within the agreed area of search; *and*

  2. Can accommodate the general requirements of the development; *and*

  3. Are, in principle, in conformity with the Adopted Development Plan, the National Planning Policy Framework and its associated National Planning Practice Guidance.

5.3.9 In considering whether an alternative site can accommodate the general requirements of the development the Council will expect a flexible approach to be employed. For example, where appropriate, applicants will be required to consider disaggregating proposals where two or more alternative sites with a similar combined capacity have been identified.

5.4 The Exception Test

5.4.1 If, following application of the Sequential Test, it is not possible for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if required (see Table 3 Flood Risk Vulnerability and flood zone compatibility PPG). For the Exception Test to be passed:

- it must be demonstrated that the development provides wider sustainability benefits (including social, economic and environmental benefits) to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment; and
- 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.

5.4.2 The Exception Test applies to planning applications and the allocation of land through the development plan process. Both elements of the exceptions test must be satisfied.

5.5 The Joint Core Strategy Strategic Flood Risk Assessment

5.5.1 To complement the Environment Agency's flood zone maps, Gloucestershire County Council prepared a **Strategic Flood Risk Assessment (SFRA) Level 1** for the County in September 2008. This assessed all forms of flood risk: fluvial (rivers), tidal (sea), surface water, groundwater, sewers, reservoirs and canals.

5.5.2 To provide more site specific information, two **SFRA Level 2** reports were published in October 2011 and April 2013. These involved a more detailed review of flood risk at identified broad locations based on the risk identified in the Level 1 SFRA. Areas with the lowest flood risk (Flood Zone 1) were not subject to the Level 2 SFRA. Along with the Environment Agency's flood maps, the SFRA L1 and L2 and the site specific FRA provide the information necessary to apply the Sequential Test and Exception Test in the development management process by helping to identify sites that may or may not be suitable for development. An additional SFRA Level 2 report will also be published as part of the emerging Tewkesbury Borough Plan to cover any housing and employment allocations.

5.6 Site Suitability and Flood Risk Considerations for Planning Applications and Site Specific Flood Risk Assessments (FRA)

5.6.1 Developers proposing development or a change of use to a more vulnerable class in areas of flood risk from any source or with critical drainage problems (as notified to the local planning authority by the Environment Agency) or which could create flood risk for others or are more than 1 hectare in size are responsible for:

- Demonstrating that the proposed development is consistent with national and local planning policy.
- Undertaking appropriate consultation with the flood risk management authorities (Section4)
- Providing a site-specific flood risk assessment (FRA), as part of the planning process, which meets the requirements of this Section, and those set out by the relevant flood risk management authority.
- Integrating measures into the proposals design that reduce flood risk to the development and elsewhere, by incorporating appropriate flood risk management measures (Chapter 9) including the use of Sustainable Drainage Systems (SuDS) (Chapter 6)
- Ensuring that any necessary flood risk management measures are sufficiently funded to ensure that the site can be developed, occupied and maintained safely throughout its proposed lifetime. (Section 6.15)

5.6.2 The Council will refuse to validate applications for sites in Flood Zones 2 and 3 where no FRA is submitted.

5.6.3 The following section sets out the points that need to be taken into consideration when determining a site's suitability for development due to flood risk. All requirements are consistent with the NPPF and PPG with local requirements explained further.

Assessment

5.6.4 Applicants must consider allocations within the local Development Plan. If the site has been allocated in the Development Plan for the same land use type/vulnerability classification that is now being proposed, then an assessment of flood risk, at a strategic level, has already been undertaken. This will have included assessing the site, against other alternative sites, as part of the sequential approach to flood risk. A site's allocation in the Development Plan for the same land use/vulnerability does not however preclude it from requiring a site specific FRA, only from the application of the Sequential Test.

5.6.5 Can it be demonstrated that the flood risk information contained within the SFRA and associated sequential test assessment accompanying the local plan/development plan (where applicable) is still appropriate for use? If not, has the flood zoning of a site changed after adoption of the relevant part of the local plan or is there any updated climate change allowances or a recorded flood. In this case Tewkesbury Borough Council will require the developer to provide evidence that the changes have been taken into account and, for a Major Development, the Developer will need to provide an updated Flood Risk Assessment using updated modelling to redefine the flood zones.

5.6.6 Where the site has not been allocated in the local plan or the flood zone classification has changed since adoption of the plan (i.e. it is a windfall or non-allocated site), a detailed flood risk assessment including the sequential test and, where appropriate, the exception test will need to be undertaken following the overarching principles of the sequential approach. Details of the sequential and exception test are specified above at 5.3 and 5.4.

5.6.7 Applicants should indicate their site boundary on a plan and, if applicable, the boundary of any allocated site and provide evidence of any checks to see if there is any updated Flood Risk information after the preparation of the relevant SFRA.

5.6.8 For 'major' development (as defined within The Town and Country Planning Development Management Procedure (England) Order 2015) a detailed FRA is to provide an appropriate assessment (hydraulic model) of the 1% annual probability flood event, with **70%** allowance added to 'peak river flows' to account for climate change.

5.6.9 For non-major development; the preference is to undertake the same approach as for major development. However in the absence of modelled climate change information, it may be reasonable to utilise an alternative approach (see APPENDIX V).

5.6.10 Have other sources of significant flood risk from sources other than fluvial or tidal, such as pluvial (surface water, as demonstrated either by the LLFA surface water management plan or physical photographic evidence of previous events), groundwater, reservoirs, sewers, etc. been considered (see Sequential Test details at 5.3)?

5.7 What an FRA Should Contain

5.7.1 A brief FRA is all that is normally required for small-scale proposals such as householder development and other minor extensions (<250sqm) in Flood Zones 2 and 3. The FRA (which must be submitted along with supporting evidence, as part of a planning application) for such developments must, as a minimum, be based on the most up to date EA guidance for Minor Development in Flood Zone 2 and 3. In addition, it needs to take into account the most up to date advice on climate change (see APPENDIX V for local Environment Agency Guidance on both these points). However, for other types of development a more detailed FRA will be required. Obtaining pre-application advice from the Council will assist in determining the level of detail required for a FRA.

5.7.2 For more complex development schemes, an FRA will be required to include a detailed sustainable drainage scheme to mitigate the site. Any suggestion that preferred SuDS techniques for a particular site are unviable or unduly onerous, by virtue of factors such as extraordinarily high development costs or significant harm to heritage assets must be robustly evidenced. The **Environment Agency** has published further guidance setting out what an FRA should contain and **English Heritage** has published guidance on the consideration of heritage assets within flood mitigation schemes.

5.7.3 FRAs should be proportionate to the risk and appropriate to the scale, nature and location of the development. A FRA should always be undertaken **as early as possible** in the planning process to avoid abortive work raising landowner expectations where land is unsuitable for development.

5.7.4 **FRAs should**, where appropriate:

a) Consider and quantify the **different types of flooding** whether from natural or human sources (i.e. canals, dam breaches and reservoir breaches) and including joint and cumulative effects. The LPA will expect links to be made to the management of surface water as described in Chapters 6 and 7. Information to assist with the identification of surface water and groundwater flood risk is available from the LLFA, the EA and the LPA. Applicants should also assess the risk of foul sewage flooding as part of the FRA. Severn Trent Water as sewerage undertaker can provide relevant information to the applicant to inform preparation of FRAs.

b) Consider the effects of a range of flooding events including the **impacts of extreme events** on people, property, the natural and historic environments and river processes.

c) Consider the **vulnerability of occupiers and users** of the development, taking account of the Sequential and Exception Tests and the vulnerability classification, and include arrangements for safe access (Please see the Defra/EA publication 'Flood Risks to People' for further information on what is considered 'safe').

d) Identify relevant **flood risk reduction measures** for all sources of flood risk not just for the site but elsewhere i.e. downstream existing flooding problems.

e) Consider both the potential adverse and beneficial **effects of flood risk management infrastructure** including raised defences, flow channels, flood storage areas and other artificial features together with the consequences of their failure.

f) Include assessment of the remaining **residual risk** after risk reduction measures have been taken into account and demonstrate that this risk is acceptable for the particular development or land use. Further guidance on this is given in Chapter 9.

g) Be supported by appropriate **evidence data** and information, including historical information on previous events. All topographical survey data submitted with applications must be presented as an accurate height Above Ordnance Datum, Newlyn (mAOD)

h) Consider the risk of **flooding arising from the proposed development** in addition to the **risk of flooding to development on the site**. This includes considering how the ability of water to soak into the ground may change after development. This would mean the preparation of surface water drainage proposals. This includes all flow routes including flood flow paths or ordinary watercourses flowing onto the development site and therefore needing to be taken account of.

i) Take a **'whole system'** holistic approach to drainage to ensure site discharge does not cause problems further along in the drainage sub-catchment and can be safely catered for downstream and upstream of the site.

j) Take the appropriate **impacts of climate change** into account for the lifetime of the development including the proposed vulnerability classification.

k) The FRA must clearly demonstrate that the **Sequential Test and Exception Test** have been passed.

l) A surface water drainage strategy contains the proposals for the surface water drainage of the development. Such a strategy should include initial proposals that are sufficient to demonstrate a scheme can be delivered that will adequately drain the proposed development whilst not increasing flood risk elsewhere as part of the FRA.

m) If an outline application is to be submitted for a major development, then an outline surface water drainage strategy must be submitted as part of the FRA, outlining initial proposals and quantifying the conceptual surface water management for the site as a whole. This should detail any strategic features, including their size and location. A

detailed surface water drainage strategy must subsequently be submitted and approved for the whole site and, with each reserved matters application that comes forward, it must be demonstrated that the surface water drainage strategy is still appropriate and how the reserved matters application complies with the outline and detailed whole site surface water drainage strategy's.

Surface Water Drainage Strategy

5.7.5 Developers should prepare the surface water drainage strategy as part of the FRA, ensuring consistency between the surface water flood risk and any initial drainage proposals. It is recommended that a surface water drainage strategy is based on the following principles:

a) Work up your drainage strategy in tandem with your site layout and highway designs. This will help avoid abortive work in any one area. Use Chapters 6, 7 and 9 to ensure that the following have been considered:

a.1. The submission requirements, including any supporting investigations

a.2. Sustainable drainage design principles

a.3. Interception, infiltration, flow rate runoff control, volumetric runoff control, and exceedance flow management

a.4. Site discharge location and attenuation provision

a.5. Water quality treatment, habitat provision and biodiversity

a.6. Health and safety, access and amenity

a.7. Use the correct climate change allowances for the development based on its lifetime.

a.8. Ensure that the required management and maintenance of all site features has been clearly set out as part of the drainage strategy. Get initial agreements in place to cover management funding for the lifetime of the development.

b) Check that the quality of the water environment and therefore the Water Framework Directive (WFD) impacts have been specifically considered as part of all of the flood and drainage measures proposed. Is development of the site likely to cause detriment to the WFD status of a water body? Have opportunities been taken to enhance the water environment?

5.7.6 Where there are proposals which include changing the discharge of surface water flows between catchments, planning permission will be refused unless copies of Legal Easements from the new point of discharge to the original point of discharge to the main watercourse

are provided to the Planning Authority as part of any planning submission. The detailed drainage design will need to comply with the Local Authority Suds Officers Practice Guidance along with this document. The design will need to ensure that any attenuation facility has a Flood Hazard Rating of less than **0.75**, with normally a maximum depth of storage of **1.2m**, and banks no steeper than a **1 in 6** slope). The design shall ensure that the attenuation storage requirement is assessed against a **1%** (1 in 100) annual probability flood event plus **70%** allowance for climate change on the receiving watercourse. The greenfield run off rate to be used for the design of Attenuation Storage for all storms up to a **1%** (1 in 100) annual probability plus 70% allowance for climate change, shall be the **1 in 1 year** greenfield run off rate calculated by using ReFH2 for the whole catchment.

5.7.7 For Development Sites where either there is recent photographic evidence, or if the Surface Water Management Plan shows the presence of pluvial flooding, the Development will need to compensate for the pluvial flood volume lost by providing additional flow and storage capacity within the developments surface water drainage system and attenuation storage. In a large-scale development or an allocation, the compensatory storage would need to be comprehensive, contiguous and protected from development.

5.7.8 The detailed design of development should seek to reduce the risks of flooding for any existing development and land in or around the application site as part of the new development and deal with flooding in a comprehensive manner for the whole of the site.

5.7.9 Within an application site, where there is reason to believe that overland flow could occur into the site, then provision shall be made to accommodate those flows within the site layout. The design of the site must also ensure that flows resulting from these overland flows are managed in exceedance routes that minimise the risks to people and property and avoids creating hazards to access and egress routes.

5.7.10 The critical duration event for watercourses and rivers can typically range from around 4 hours for small catchments, up to 3 days for the large rivers such as the River Severn. Therefore, there is the real possibility the critical duration event for the development site could coincide with major flows in rivers, with subsequent hydraulic consequences. Where there is this 'dependency' then the relevant return period needs to be applied to both the site drainage system and the relevant watercourse, to ascertain what the implications are for the site system. Where the impact is considered to be

significant, more detailed examination of the interconnection needs to be undertaken, using joint probability analysis, in order to refine the site design.

CHAPTER 6 - SUSTAINABLE DRAINAGE SYSTEMS (SuDS)

6.1 SuDS are surface water drainage systems which manage water runoff in a more sustainable way than conventional drainage, through managing flow rates and protecting water quality. All developments regardless of scale and constraints should seek to incorporate Sustainable Drainage and in virtually all cases it will be a requirement. It is incorrect to assume that ground conditions preclude their use, as there are a variety of solutions available depending on the location and needs of a development. SuDS are intended to replicate, as closely as possible, the natural drainage from a site before development takes place.

6.2 SuDS offer significant advantages over conventional piped drainage systems in reducing flood risk, by reducing the quantity of surface water run-off from a site and the speed at which it reaches water courses, promoting groundwater recharge and improving water quality and amenity. The range of SuDS techniques available means that a SuDS approach in some form will be applicable to almost any development, to maximise the opportunities and benefits obtainable from surface water management.

6.3 Please note that reference is made to 'SuDS' throughout this chapter, rather than 'surface water drainage' as the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), Non-Statutory Technical Standards for Sustainable Drainage and adopted and emerging Local Planning policies require a SuDS solution to surface water management for new development. Many of the general principles within this chapter can also be applied to traditional surface water drainage and so this chapter needs to be complied with on all development sites and the provision of SuDS maximised. Even on very constrained sites SuDS can be implemented in one form or another.

6.4 WHAT IS REQUIRED?

6.4.1 For all Greenfield sites, developers must attenuate runoff so as to not exceed the **1 in 1 year** greenfield rates for all storms up to a 1 in 100 year event. An allowance of **+70%** peak rainfall must be made to take account of future climate change and urban creep. The climate change allowance must be added to the post-development run-off rate and volume calculations only.

6.4.2 For brownfield sites, SuDS techniques should reduce the proven current instantaneous runoff rate to the **1 in 1 year** greenfield run off rate wherever possible for all storms up to a 1 in 100 year event. An allowance of **+70%** peak rainfall must be made to take account of future climate change and urban creep. In all instances, opportunities to improve runoff rates and reduce flood risk will be sought, with a minimum discharge reduction of **40%**. Innovative SuDS design solutions will be supported in principle.

6.4.3 The preferred hydrological methods are those utilising ReFH2 with FEH 2013 rainfall data. If other models give a more conservative estimate of flow rate and volumes, these may be acceptable to the LPA.

6.5 There are a variety of SuDS techniques and further guidance should be sought via the SuDS Manual (CIRIA C753). The use of 'open to surface' SuDS management train techniques is preferred, as opposed to piped or tanked solutions which offer nothing in terms of water quality, biodiversity, amenity, have increased future maintenance requirements and are typically more expensive to implement. In addition, any innovative solutions will be welcomed and supported in principle.

6.5.1 One or more of the following 'open to surface' options should be considered first. This list is not exhaustive and further guidance can be found in the SuDS Manual (CIRIA C735). If these methods are discounted, robust evidence as to why this is the case should be demonstrated as part of any submission.

Surface SuDS Elements

Permeable surfaces: Surfaces that allow inflow of rainwater into the underlying construction or soil; such as gravel, permeable hard surfacing, permeable block paving, porous tarmac and porous concrete. The storage can be created within the sub-base of these surfaces given careful selection of the stone fill or use of plastic box systems. They are also very effective at removing a wide range of pollutants and may also permit infiltration.

Green roofs: A vegetated roof which provides retention, attenuation and treatment of rainwater, and promotes evaporation and local biodiversity.

Brown roofs: Similar to green roofs, but the permeable layer is made from crushed material which provides a good void ratio and does not contain any contaminates.

Rainwater harvesting: A system that collects rainwater from where it falls rather than allowing it to drain away. It includes water that is collected within the boundaries of a property, from roofs and surrounding surfaces and can reduce the risk of flash flooding. Rainwater harvesting systems are not included in the calculation of attenuation storage provision due the fact that they may be full at the start of a storm event.

Filter trenches/ drains: Linear drains consisting of trenches filled with a permeable material, often with a perforated pipe in the base of the trench to assist drainage, to store and conduct water. They may also permit infiltration.

Filter strips: Vegetated areas of gently sloping ground designed to drain water evenly off impermeable areas and to filter out silt and other particulates.

Sand Filters: Structural controls designed to treat surface water by passing runoff through a filter bed of sand. Temporary storage can be provided by ponding above the filter layer and they can be used where high pollutant removal is required.

Swales: Shallow vegetated channels that conduct and can retain water in larger storm events. The vegetation filters out particulate matter in the flow thus providing treatment and improving water quality. They may also permit infiltration.

Basins: Ponds and wetland areas that may be utilised for surface runoff storage.

Bio-retention areas: Vegetated areas designed to collect and retain runoff and permit settlement of suspended solids and biological removal of pollutants before discharge via a piped system or infiltration to the ground.

6.5.2 The following below ground techniques are recognised, but the developer must demonstrate how the siltation risk is to be reduced and how silt can be removed from the drainage element safely and economically. Design life data, maintenance and replacement information must also be provided. In general; priority is given to the use of 'open to surface' SuDS management train techniques, as opposed to piped or tanked solutions which offer nothing in terms of water quality, biodiversity, amenity, have increased future maintenance requirements and are typically more expensive to implement.

Sub-Surface SuDS Elements

The most commonly found sub-surface elements of a sustainable drainage system are set out below. It should be noted that these solutions should only be considered when all other surface/open to air techniques have been robustly demonstrated not to be suitable.

Geocellular/Modular Storage: Sub-surface storage structure that has a very high void ratio and thus occupies a reduced space compared to other options, e.g. stone filled trenches. They can also be used as a very effective infiltration technique where ground conditions are suitable.

Pipes and accessories: A series of conduits and their accessories, normally laid underground, that convey surface water to a suitable location for treatment or disposal.

Pre-treatment devices: These remove silt, sediment and debris to prevent downstream clogging and provide pollutant capture from runoff. These devices require regular maintenance to work efficiently. e.g. sediment sumps and catch basin inserts.

Large diameter pipes, culverts or tanks: Provide a volume of below ground storage which should be large enough to allow for unrestricted future maintenance and cleaning.

6.6 Prior to submitting a planning application an applicant should discuss with the Council's Development Management team what SuDS techniques would be most appropriate and how they should be applied on a site. Some SuDS techniques are not appropriate on sites with particular ground conditions. The Local Highways Authority should be contacted to discuss suitable/adoptable SuDS solutions for the surfacing of estate roads.

6.7 SuDS DESIGN PRINCIPLES

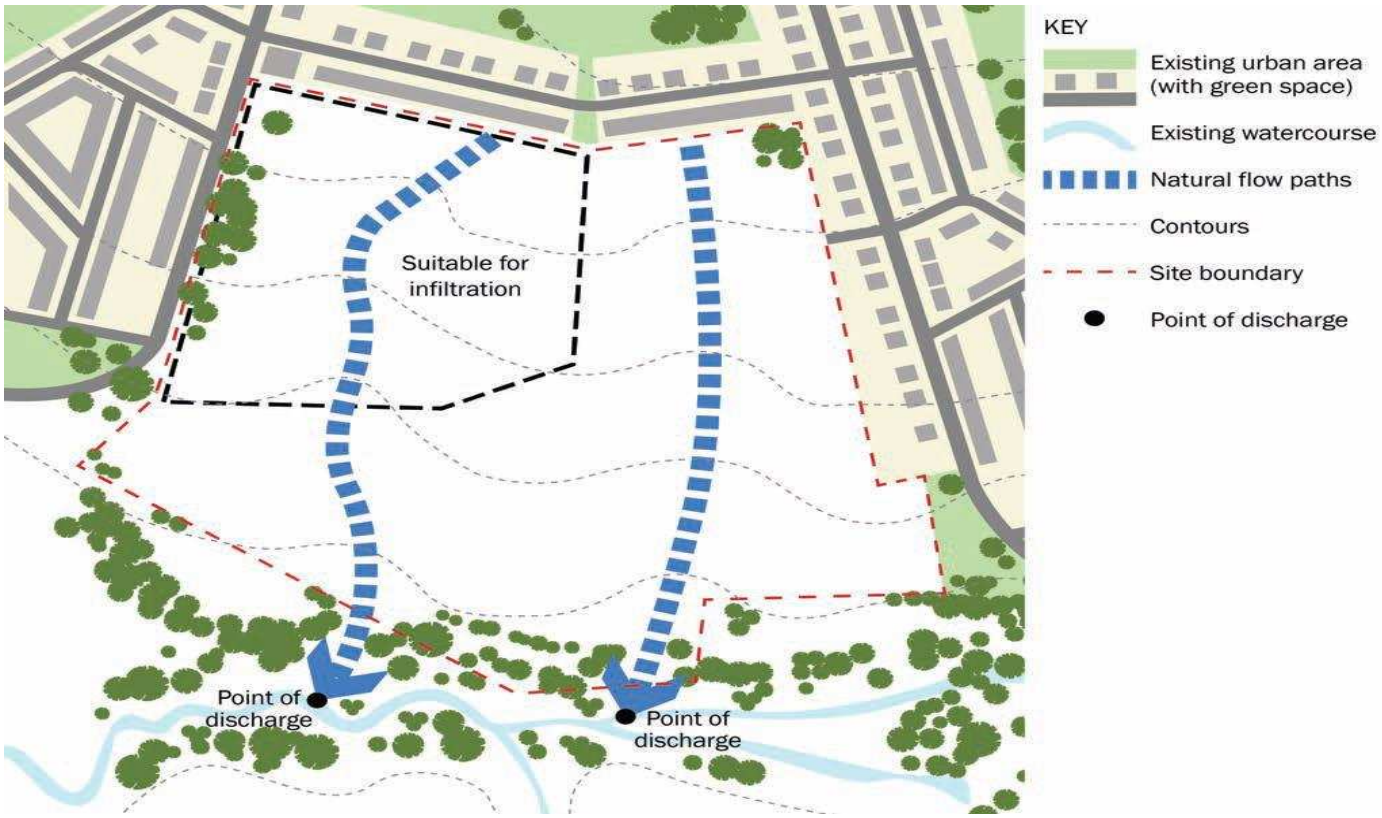
Design in SuDS from the start.

6.7.1 Considering SuDS during the preliminary stages of site design provides the opportunity to incorporate features that are appropriate to the local context and character of an area. Integrated design to achieve multi-functional benefits is inherent to the site master planning and layout process; therefore it is most efficient and cost effective to design SuDS schemes into a site as early as possible. When drainage is accounted for from the beginning of the design process, it provides opportunity for the built up areas to be designed in-line with the topography, rather than to fit the drainage around the site at a later stage which is much less effective.

6.7.2 Land uses that have different pollution potential can also be clustered and phased so that management trains can be designed most effectively. The result of early inclusion of SuDS is a more effective and efficient layout which will avoid the need for abortive work and changes at a later stage which can escalate costs.

6.7.3 The better the SuDS design the more options for adoption that might be available to a development. The stages described in Figure 6.1 to Figure 6.5 show how a design can integrate SuDS spatially through the evolution of a masterplanning exercise.

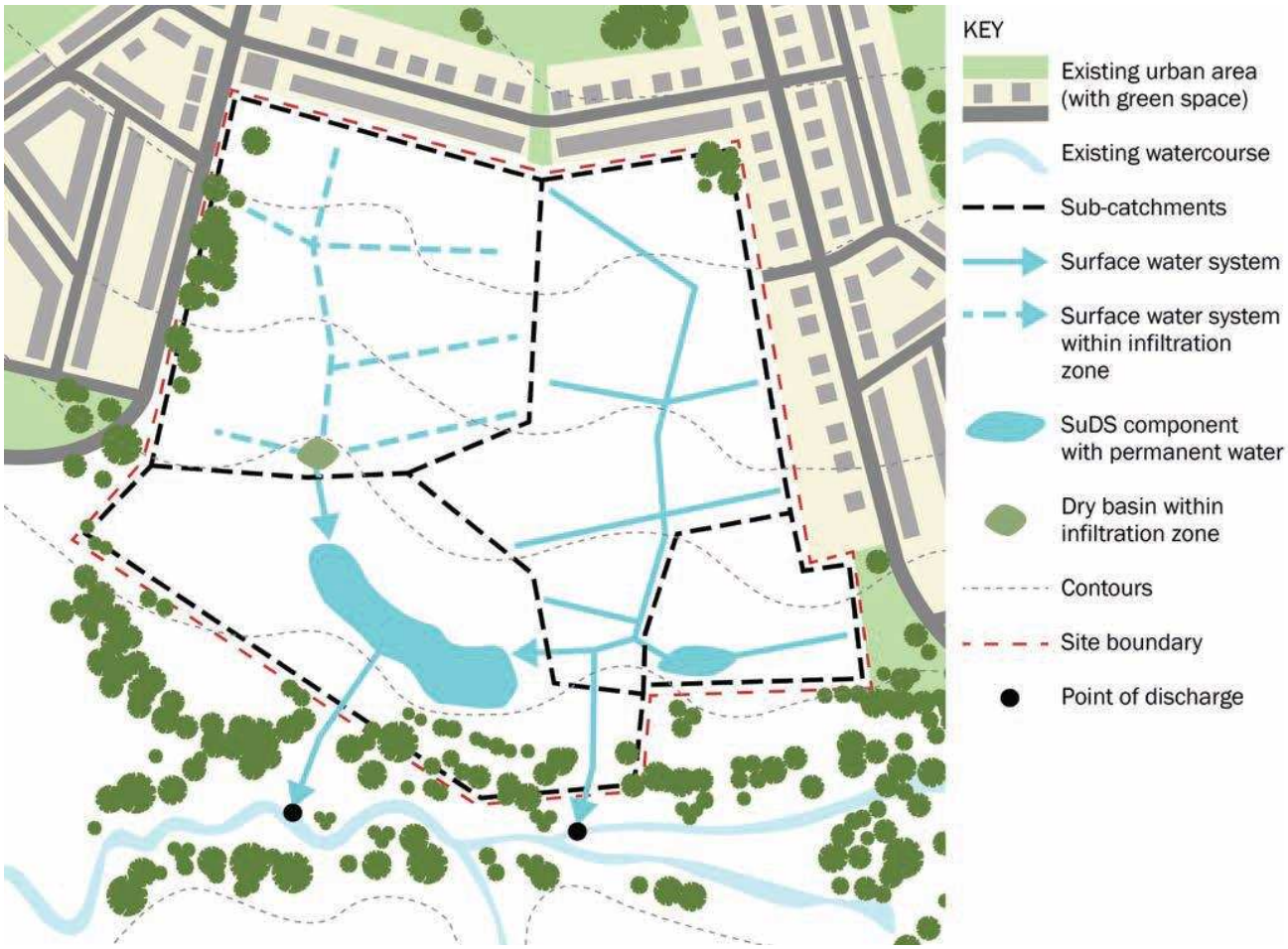
Figure 6.1: Stage One



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Examine site typography and geology: Aim to mimic the natural drainage systems and processes as far as possible. Identify key natural flow paths, existing water bodies and potential infiltration areas to understand opportunities and constraints.

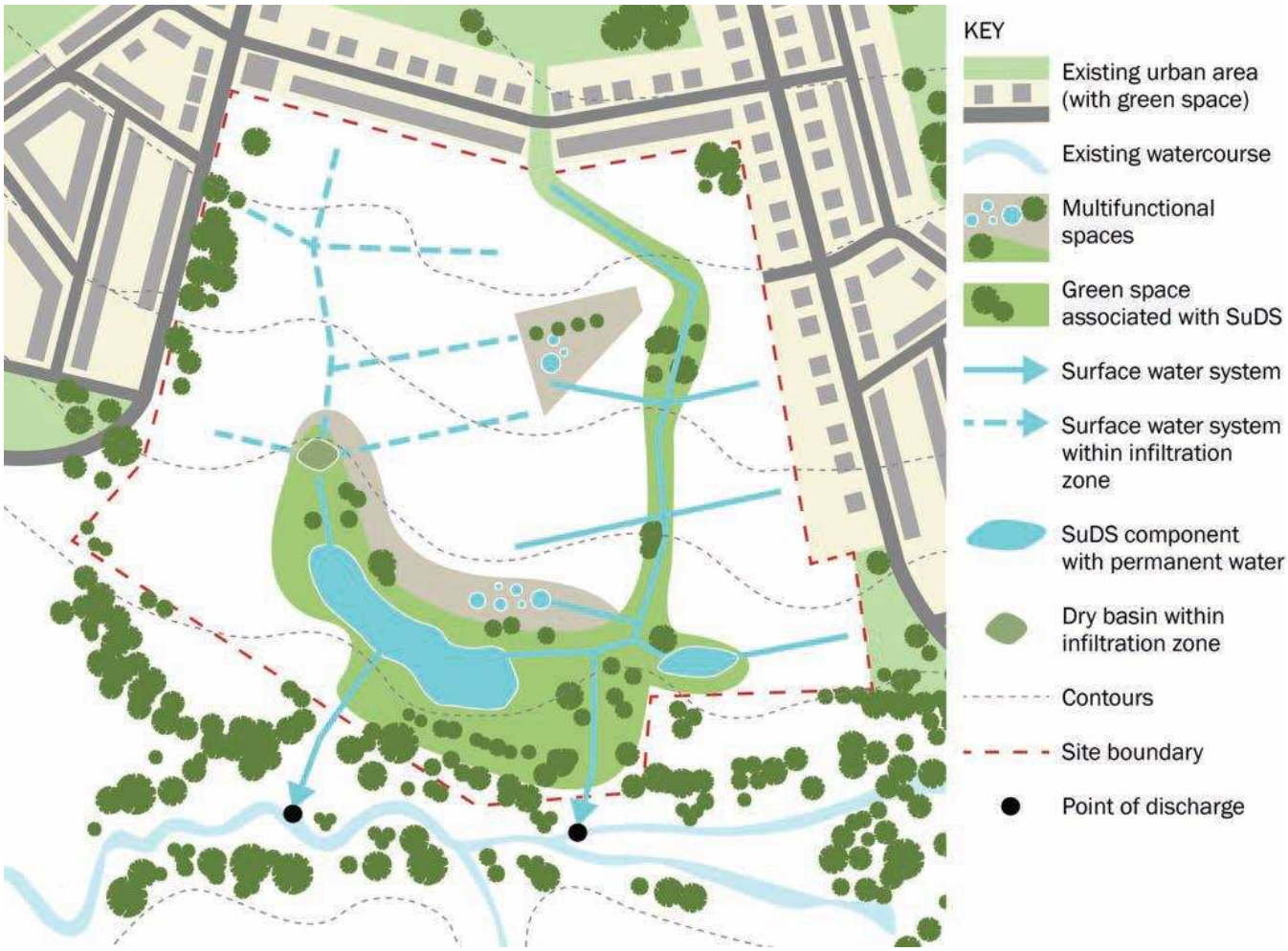
Figure 6.2: Stage Two



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Create a spatial framework for SuDS: Minimise runoff by rationalising large paved areas and maximising permeable surfaces. Consider likely space needs for site control SuDS based on character of development and the proposed degree of source control. Use flow paths and possible infiltration or storage areas to inform development layout.

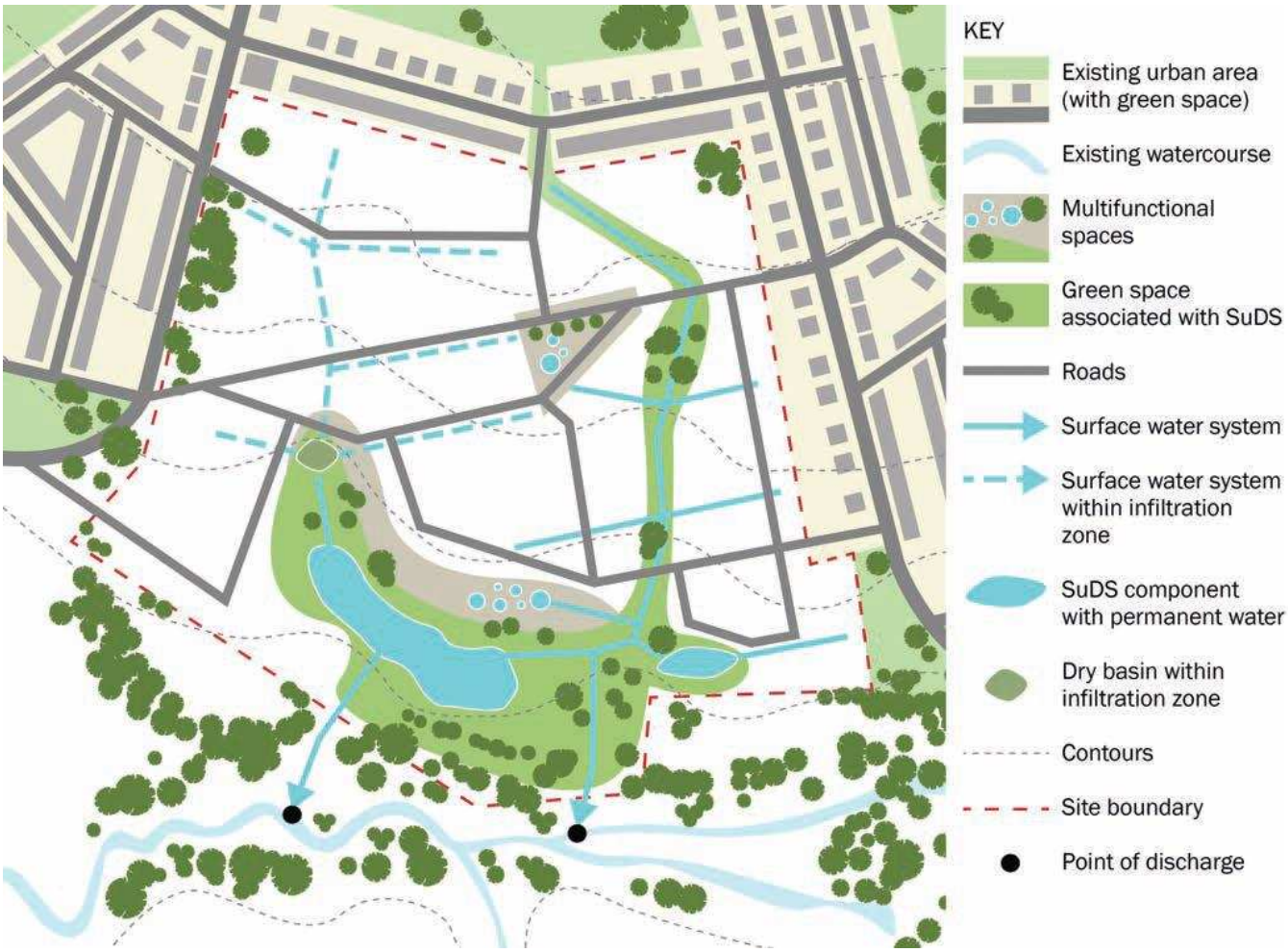
Figure 6.3: Stage Three



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Look for multi-functional spaces: Consider how SuDS features can be co-located with green infrastructure, open space and public realm areas to create multi-functional spaces. SuDS can be designed to be valuable amenity and ecological features.

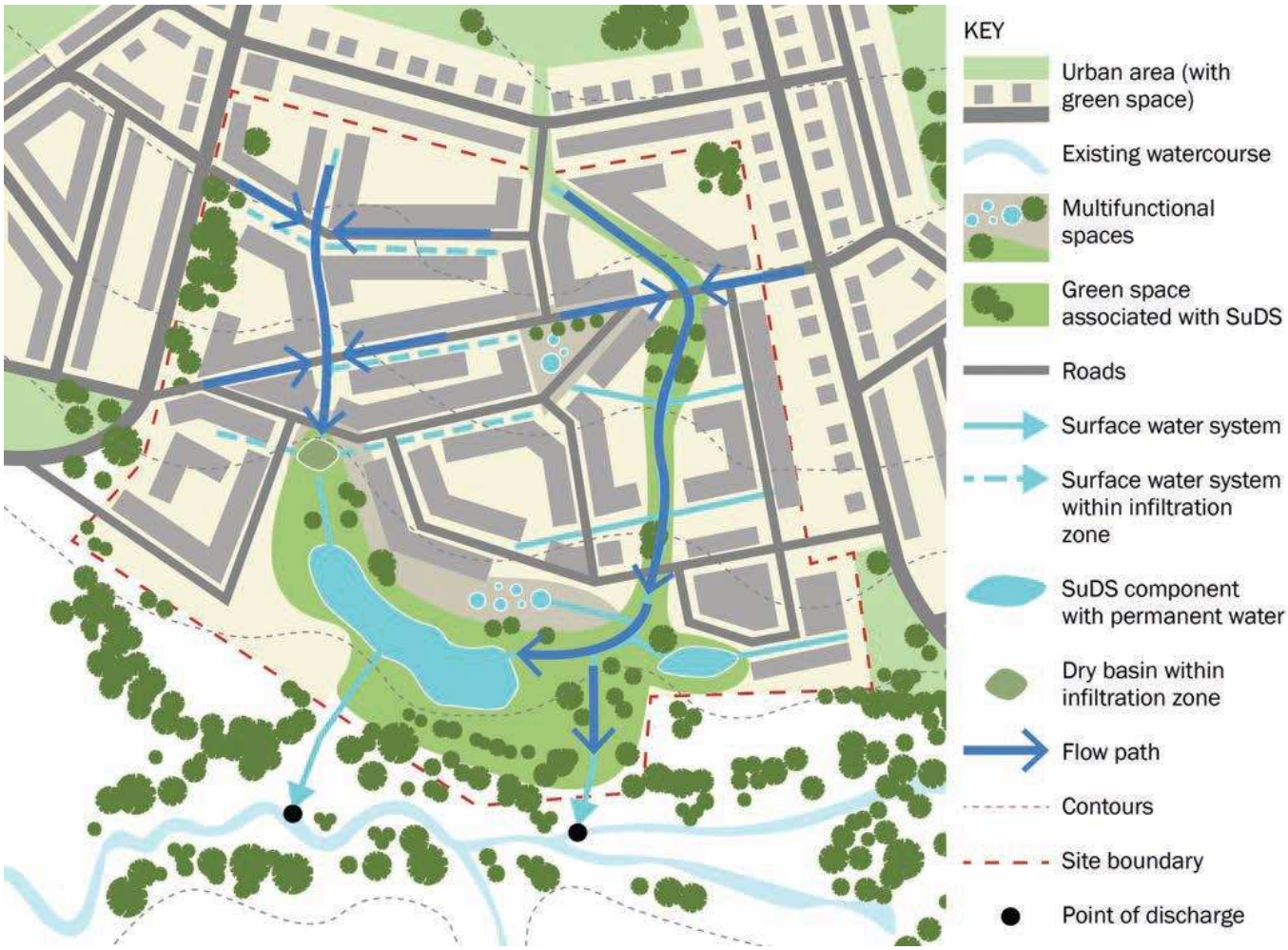
Figure 6.4: Stage Four



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Integrate the street network with SuDS: Structure the street network to complement and manage flow pathways. Integrate SuDS features into street cross-sections, ensuring street widths are adequate. SuDS should be used to enhance the streetscape providing amenity and multi-functionality by integrating with other street features including tree planting, traffic calming, parking bays, verges and central reservations.

Figure 6.5: Stage Five



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C7537

Cluster land uses to manage pollution: The number, size and type of SuDS selected will be affected by land uses and the corresponding pollution risk. Potential polluters, e.g. industrial development should have their own isolated SuDS network. Integrate a series of SuDS features that will provide water treatment throughout the networks, responding to the level of pollution risk. Clustering should be considered alongside other mixed use ambitions.

Mimic natural drainage

6.8.1 The topography of an undeveloped site provides a good indication of natural flow routes and can therefore assist in defining appropriate and efficient flow routes through a developed site without relying on additional infrastructure. The most effective and cost efficient designs make use of the local topography, increase landscape permeability, and reduce the amount of surface water flowing off site as much as possible. Allowing surface water runoff to follow the natural physical geography requires less soil movement and can eliminate the need for additional underground piping and pumping of water. Where the site is suitable for infiltration, opportunities to discharge water to the ground should be taken to mimic natural infiltration and recharge groundwater aquifers.

6.8.2 All new developments on greenfield land are required to discharge the runoff from the impermeable areas at the 1 in 1 year greenfield runoff rate, or less than. The IDB may stipulate its rates of discharge for developments within its area and the Lead Local Flood Authority (LLFA) or LPA agree an acceptable discharge rate outside of these areas. Note that in the IDB area, consent will be required for any discharge into an IDB watercourse. Similarly a developer will be required to provide evidence confirming their right to discharge surface water to any watercourse particularly where a change of catchment could occur.

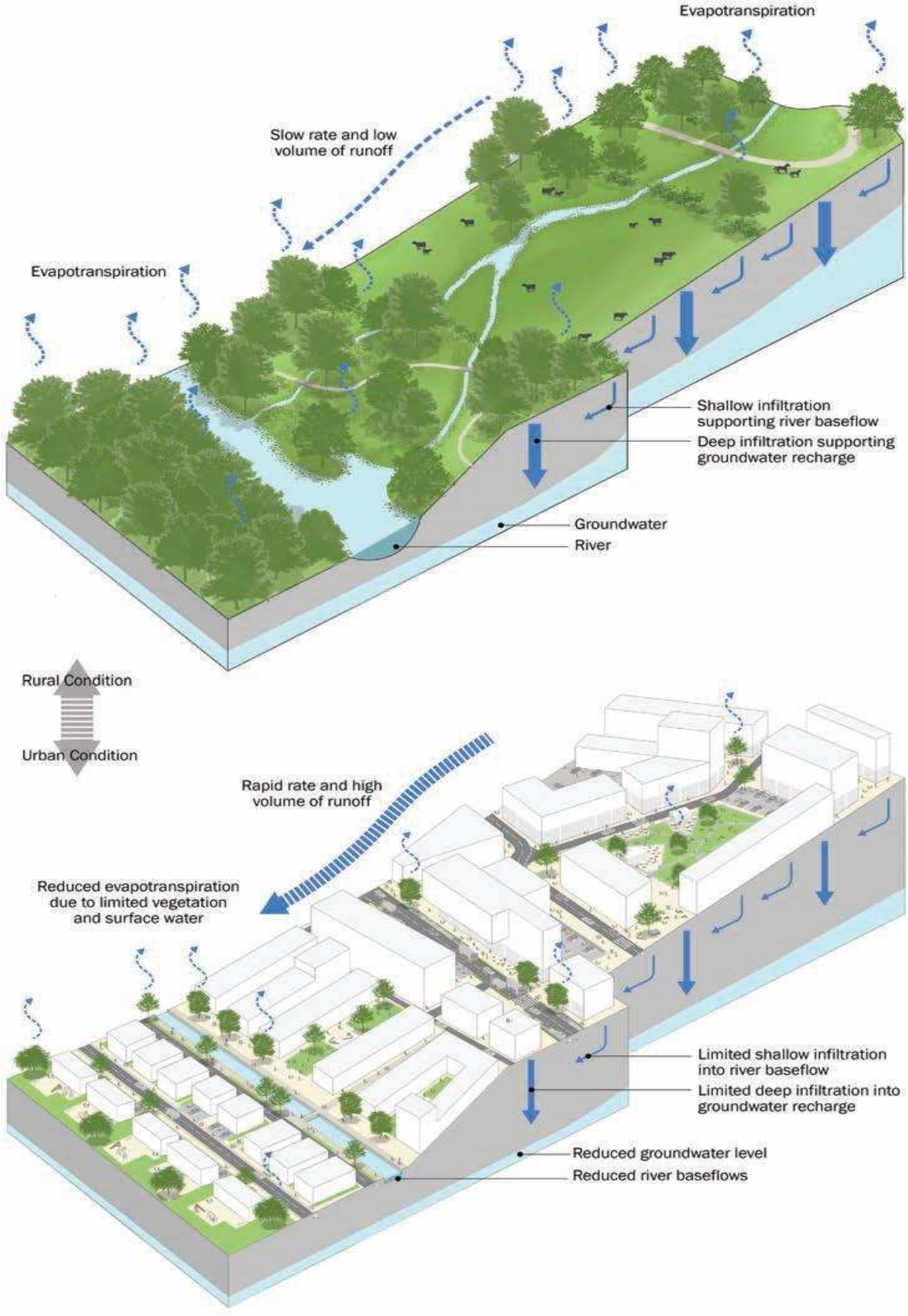
6.8.3 All major development proposals will need to demonstrate which watercourse catchments they fall within.

6.8.4 It must be demonstrated by the applicant that the site can continue to drain when receiving water bodies are in flood conditions. Irrespective of any agreed runoff rates, source control methods must be implemented across sites to provide effective pre-treatment of surface water. This must be demonstrated as part of the proposal.

6.8.5 Brownfield (previously developed land) sites must reduce the existing runoff from the site as part of the redevelopment. In order to provide betterment, redevelopments should look to reinstate 1 in 1 year greenfield runoff rates unless otherwise agreed by the LPA.

6.8.6 Figure 6.6 shows the differences in drainage patterns between natural landscapes and built-up areas. Mimicking the natural landscapes in urban areas is the best strategy to mitigate flood risk and improve downstream water quality.

Figure 6.6: Difference between natural and urban drainage

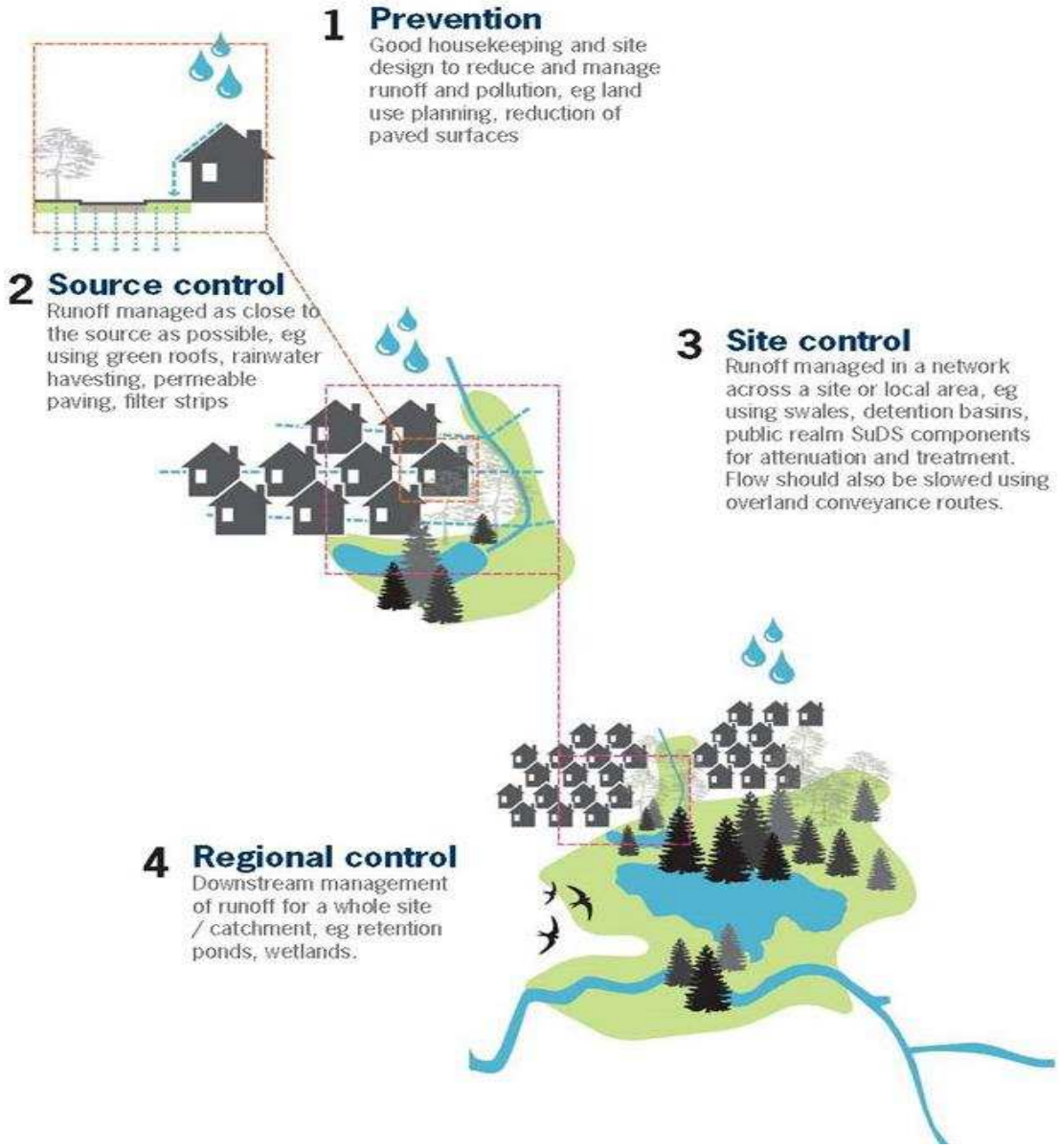


Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

The Surface Water Management Train

6.8.7 The Surface Water Management Train (sometimes called the treatment train) is fundamental to designing a successful SuDS scheme and provides a hierarchy of drainage techniques for improving quality and quantity. If water cannot be dealt with at one level in the management train, it should sequentially be taken down the hierarchy. Techniques closer to source are preferable to those lower down the hierarchy. Therefore prevention and source control should always be considered before site or regional control and discharging runoff to surface water sewers should only be considered as a last resort. Further information on applying the principles of the Surface Water Management Train is included below.

Figure 6.7: SuDS Management Train (CIRIA C697 2007)



Water reuse first

6.8.8 Reusing water whenever possible is important to improving the country's water resilience, and reducing pressures on precious water supplies. Recycled rainwater and surface water runoff can be used for non-potable purposes, such as toilet flushing and irrigation. Water can be collected for reuse from both roofs and/ or paved surfaces and can be stored for reuse using a water butt or rainwater recycling system. Surface water runoff from streets or public areas can also be collected and treated using SuDS features, such as a rain garden, before storing it for surrounding buildings to reuse.

Follow the drainage Hierarchy

6.8.9 It is a Building Regulations and PPG requirement that the discharge hierarchy in Figure 6.8 is used when considering proposals.

Figure 6.8: Surface water drainage hierarchy

Rainwater shall discharge to the following, listed in order of priority

To ground in an adequate soakaway or some other adequate infiltration system; where that is not reasonably practicable	▶	**A watercourse; or where that is not reasonably practicable**	▶	**A surface water sewer, highway drain or other drainage or where that is not reasonably practicable**	▶	**A combined sewer**

Note: in all instances adequate stormwater storage will need to be provided in order to meet the relevant infiltration or discharge rates and volumes (see Section 6.4).

Use infiltration where suitable.

6.8.10 The potential for infiltration measures on a site should be considered at the outset. Careful consideration of the acceptability of infiltration drainage should be given particularly in relation to potable water sources (e.g. drinking water) or land contamination issues.

6.8.11 The British Geological Survey can provide maps and reports to support decisions with regards to the suitability of the subsurface for the installation of infiltration type SuDS type systems. The suitability for infiltration across an area should be based on:

- Existing constraints prior to planning infiltration SuDS;
- Drainage capacity and rate of infiltration into the ground;
- Potential for ground instability when water is infiltrated;
- Impact on groundwater quality as a result of infiltration;
- Development on contaminated land or Source Protection Zones (SPZ) (vulnerable aquifers).

6.8.12 Infiltration should be assessed on-site using infiltration tests that follow the detailed SuDS design principles covered in BRE365/CIRIA 156 procedure. SPZ's should be taken into account when considering infiltration and guidance provided by the EA who should be consulted to determine infiltration constraints and requirements in these areas. Where infiltration drainage is proposed on previously developed land, contamination risk needs to be considered. This may not rule out the use of infiltrating SuDS but will require site investigations and information on remediation prospects which are outside the scope of this Supplementary Planning Document (SPD).

6.8.13 The maximum acceptable depth for an infiltration device is usually 2.0m below ground level if there is any risk of groundwater contamination, with a minimum of 1.2m clearance between the base of the feature and peak seasonal groundwater levels. In areas with a high groundwater table, the possibility of incorporating shallow infiltration features such as trenches should be investigated. Deeper ('deep bore') soakaways pose a serious pollution risk and are not acceptable and it is expected they will become contrary to the European Union (EU) WFD.

Keep surface water on the surface

6.8.14 In some areas the presence of low permeability clay soils means that infiltration systems are not viable. Whilst low permeability soils are often cited as a reason for not including SuDS however, this is not acceptable as other SuDS solutions do exist. Although soakaways and other infiltration methods may not be suitable, many other methods such as swales, ponds and wetlands should be prioritised, selected and designed accordingly. It is also possible to allow some water to soak into the ground (for example out of the bottom of an unlined swale), even if drainage design calculations do not allow for it.

6.8.15 Design and layout should seek to manage and convey surface water above-ground, avoiding the use of underground piping as far as possible. This is particularly pertinent in the flatter landscape areas or areas of high groundwater. Managing surface water runoff at the surface has the benefit of:

- Avoiding concentration and acceleration of surface water into waterways which causes downstream erosion;
- Integrating removal of pollutants by filtering water during conveyance;
- Reducing construction and maintenance requirements and costs;
- Creating habitats;
- Contributing to public amenity by better quality urban and landscape design;
- Increasing residents' awareness of water management; and
- Detecting blockages and obstructions more easily.

Place-making through SuDS design

6.8.16 When using conventional surface water management systems, water is hidden in pipes underground. By bringing water management to the surface using SuDS, there is an opportunity to enliven public spaces and streetscapes. The presence of water features within the urban environment can promote a strong sense of place, bring an urban space to life and create unique spaces that can be enjoyed by all. SuDS features such as ponds, wetlands, pools, fountains and planted rills which can be purely aesthetic or interactive in nature, can be integrated into the public realm and open spaces to enrich the area with green infrastructure. Note that interactive SuDS should include an appropriate level of natural pre-treatment upstream before coming into human contact, such as in the case of water play areas. Designing for water quality is discussed further in Section 7.

Landscape-led approach

6.8.17 The selection of SuDS types and the creation of the SuDS network should both respond to and contribute to the surrounding built and natural landscape. A landscape-led approach uses SuDS as a mechanism to create strong green infrastructure networks and is important to increase connectivity to the wider ecosystem and landscape. Effective integration will also require carefully researched and selected plants, which work to improve the local green infrastructure and enhance biodiversity. Also selection of hardscape materials used in SuDS construction, such as concrete, brickwork, wood, aggregate and paving, should consider the surrounding landscape and urban character and be developed alongside the

overall urban design vision. Using a landscape led approach will improve the amenity value of SuDS for local residents, and provide water management and design benefits.

Minimise embodied carbon in SuDS

6.8.18 One of the advantages of SuDS is their ability to improve the natural environment. It is important that environment improvements from SuDS are not reduced by incorporating high carbon solutions. The excessive use of concrete and other aggregates with high levels of embodied energy is discouraged. Eliminating energy consuming water pumps whenever possible is also encouraged. Vegetated SuDS components can have a positive impact by storing carbon as they grow, through a process known as carbon sequestration.

Minimise waste in SuDS

6.8.19 When undertaking the maintenance of SuDS, waste will be generated. This will be predominantly grass and other vegetation, and may be managed on site in wildlife piles. There is still a requirement to comply with all relevant waste management legislation and ensure waste is taken to an appropriately licensed site. This is even more pertinent when waste is disposed off-site. Management of SuDS on industrial sites will need to ensure hazardous waste is disposed of separately.

Design for wildlife and biodiversity

6.8.20 SuDS can provide the ideal opportunity to bring urban wetlands and other wildlife-friendly green spaces into towns and cities. They can be linked with existing habitats to create blue and green corridors whilst providing an amenity and education resource for the community.

6.8.21 Where possible, existing habitats should be retained and incorporated into the landscape design. SuDS features are likely to have greater species diversity if existing habitats are within dispersal distance for plants, invertebrates and amphibians. It should however be noted that existing wetlands should not be incorporated into SuDS unless there is a guaranteed supply of clean water.

6.8.22 An aim should be to create new habitats based on the ecological context and conditions of the site. Habitats and species objectives that contribute to local, regional and national biodiversity targets should be prioritised. Further information on local objectives can be found in local (BAPs). Guidance on maximising the biodiversity potential of SuDS can be found in the Royal Society for the Protection of Birds (RSPB) publication, Maximising the Potential for People and Wildlife.

Design for easy maintenance and access

6.8.23 When designing SuDS it is crucial to consider throughout the process how features will be maintained and accessed, who is ultimately responsible for the lifetime of the development, and the likely costs involved. Embedding foresight into every stage of the design process will produce a more effective, better maintained SuDS scheme upon completion. Design should also consider Construction Design and Management (CDM) Regulations from the outset to ensure that access is provided for maintenance and that health and safety measures are adhered to. Those responsible for SuDS across a development must be provided with an operation and maintenance manual by the designer and this could be part of the documentation provided under CDM. Aspects that should be included within the operation and maintenance manual are shown in Table 6.1:

Table 6.1: What to Include in the Operation and Maintenance Manual

- Location of all SuDS components on site
- Brief summary of the design intent, how the SuDS components work, their purpose and potential performance risks
- Depth of silt that will trigger maintenance
- Visual indicators that will trigger maintenance
- Depth of oil in separators etc. that will trigger maintenance
- Maintenance requirements (i.e. maintenance plan) and a maintenance record pro-forma
- Explanation of the objectives of the maintenance proposed and potential implications of not meeting those objectives
- Identification of areas where certain activities are prohibited (e.g. stockpiling materials on pervious surfaces)
- An action plan for dealing with accidental spillages of pollutants
- Advice on what to do if alterations are to be made to a development or if service companies need to undertake excavations or similar works that could affects SuDS
- Details of whom to contact in the event that pollution is seen in the system or if it is not working properly

Source: CIRIA 753 (Chapter 32)

Design SuDS for brownfield sites

6.8.24 Previously developed land (brownfield sites) should not be seen as a barrier to using SuDS. When developing on brownfield sites, existing drainage infrastructure should be documented and mapped to determine what can be reused as part of the SuDS scheme.

6.8.25 The use of shallow surface features can often be a benefit in brownfield sites as they limit excavations into contaminated soils. The impact of the proposed SuDS features on any contamination and vice versa needs to be carefully assessed by an experienced professional. The presence of contamination in the ground may limit the use of certain features (e.g. soakaways) or require liners below ponds, basins and permeable pavements. However, it will never prevent the use of all SuDS features and a suitable system can be designed. The separation of surface water drainage and foul drainage should be a priority in these areas.

Consider flood extents in SuDS design

6.8.26 The natural floodplain must be protected and considered in the design of SuDS. Where SuDS are proposed in a fluvial or tidal floodplain (Flood Zones 3a or 3b) the features may fill during a flood event and would therefore not have capacity to hold the rainfall runoff from the site as originally intended. Large areas of Tewkesbury Borough, where land is low lying, are in the floodplain, and a pragmatic approach to SuDS design needs to be taken where flood risk is carefully considered. However, the presence of a floodplain should not explicitly exclude the integration of SuDS features for day-to-day water management provided the SuDS do not contribute towards stormwater storage requirements. Above ground SuDS should not be included in areas where water regularly flows or is stored

Design open spaces to incorporate SuDS

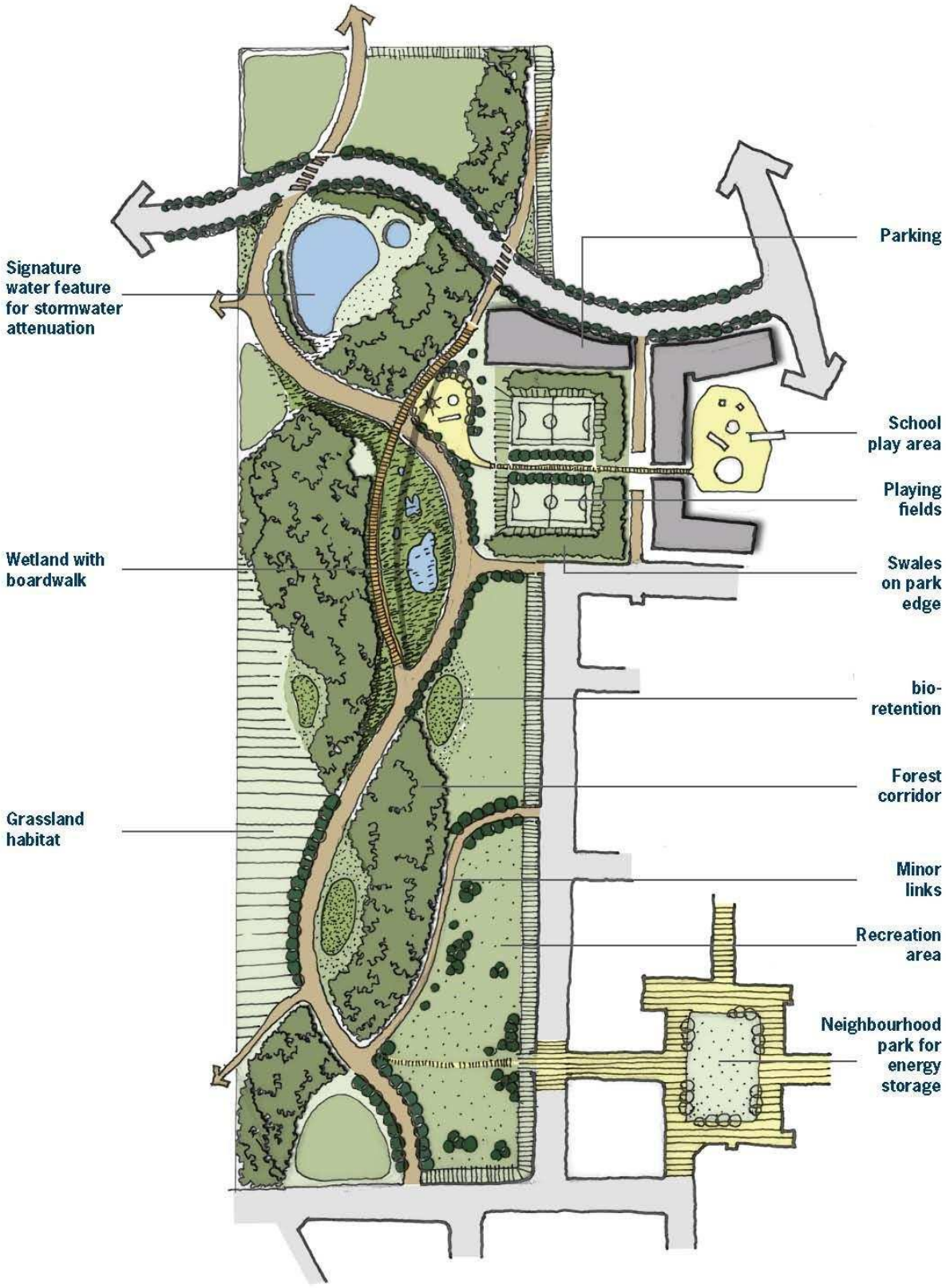
6.8.27 Open spaces are an asset to the community and to the environment and form an important component of a wider green infrastructure network. A network of woodland, recreational and open spaces, whether green or paved, will be essential for well-designed developments. Open spaces can provide space for SuDS features to provide attenuation and treatment of surface water runoff. Good design will seek ways to integrate SuDS with the rest of the open space and to make SuDS features multifunctional. In these areas, there is a need to concentrate on design and amenity value, recreational use, and fit with surrounding landscape (see Figure 6.9). Examples of multi-functional uses in open spaces include temporary storage areas doubling as playing fields or recreation areas, hardscape attenuation doubling as water features and public art, bio-retention areas doubling as

landscaped garden areas, wetlands and ponds doubling as amenity and habitat areas, and bio-retention planters linking with open space divisions or seating areas. Within open spaces, SuDS design will also need to consider:

- The interaction with the public – safety, education, and controlled access via boardwalks or similar structures;
- Areas of the ground that are likely to be seasonally wet should not be used for formal or informal recreation and play space such as sports pitches;
- An appropriate balance between visual amenity and water treatment needs to be achieved – while amenity value is of increased importance, it should not impinge on SuDS treatment and water management;
- Situating SuDS away from floodplains that might impact on SuDS treatment and floodplain storage and conveyance;
- Ecological needs – existing vegetation of biodiversity value should be retained whenever possible, and land stability taken into account.
- Opportunities to reuse recycled surface water for irrigation or other purposes.
- Consideration should be given to safety issues with regard to water ponding/ storage in or near play areas.

6.8.28 Where Tewkesbury Borough Council will adopt SuDS in public open spaces, they must still be able to function and be accessible as useable open space for the majority of the time for them to be included within the open space calculations.

Figure 6.9: Integration of SuDS features into open space design



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

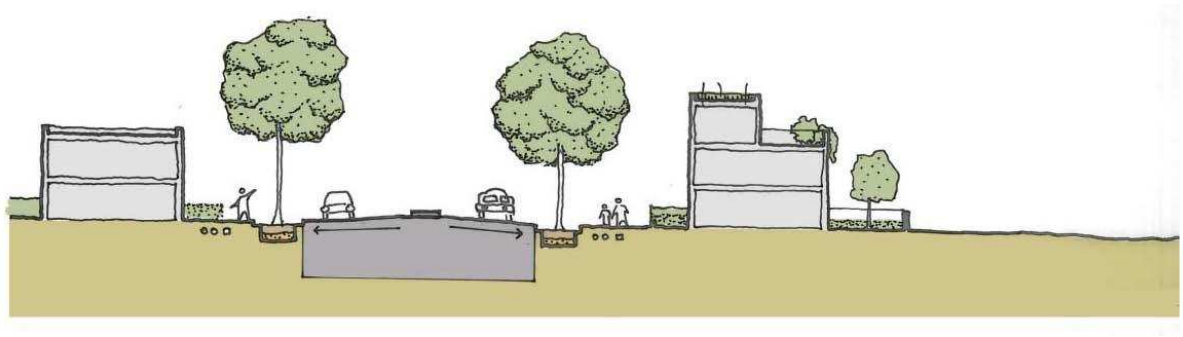
Design streets to incorporate SuDS

6.8.29 Within a catchment, streets and roads are a significant source of surface water runoff and pollutants. Streets are often used as a conveyance of surface water drainage from adjoining sites via underground pipes, and in a SuDS network they are likely to also be key conveyance routes for example through the use of roadside swales. Therefore there is a prime opportunity in streetscapes to integrate SuDS features that capture, treat and attenuate surface runoff. Improving upon traditional drainage, streetscapes can include bioretention technology (rain gardens) with appropriate conveyance such as swales or under-drained SuDS features to minimise the need for conventional piping. A number of standard streetscape features can include SuDS and become multifunctional, including verges, tree pits, traffic calming islands, and parking dividers. To implement SuDS effectively either along or within streets, there is a need to consider:

- Easy and safe access for all highway users, irrespective of mode of travel;
- Easy access to utilities for maintenance workers;
- Improvement to the urban design of streetscapes and contribution to sense of place; and
- Robust design to reduce maintenance and replacement requirements

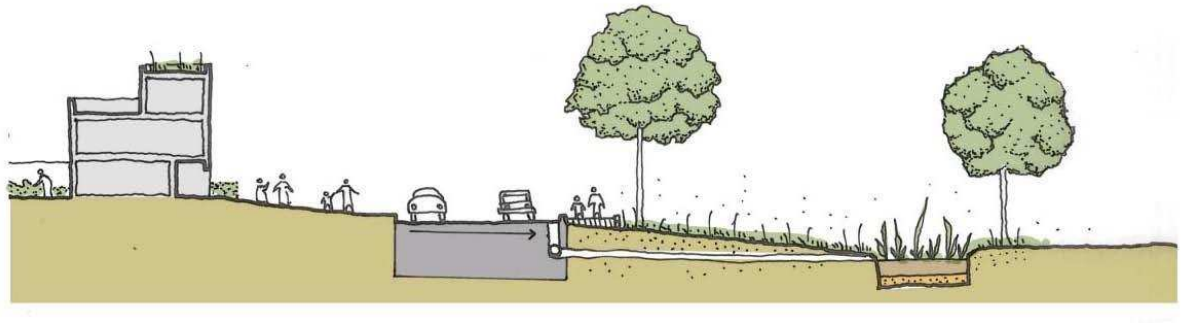
6.8.30 Figure 6.10 to Figure 6.12 demonstrate how SuDS can be incorporated into street design.

Figure 6.10: Street design to drain SuDS features to either side



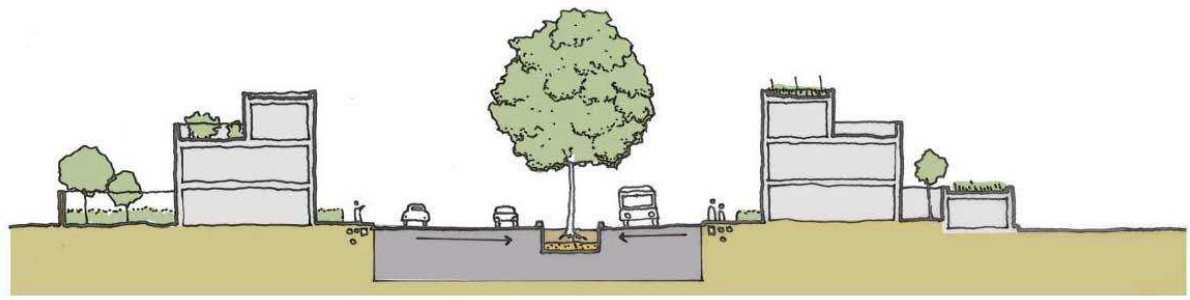
Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Figure 6.11: Street design to drain to adjoining lower ground SuDS feature



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Figure 6.12 : Street design to drain to central SuDS feature



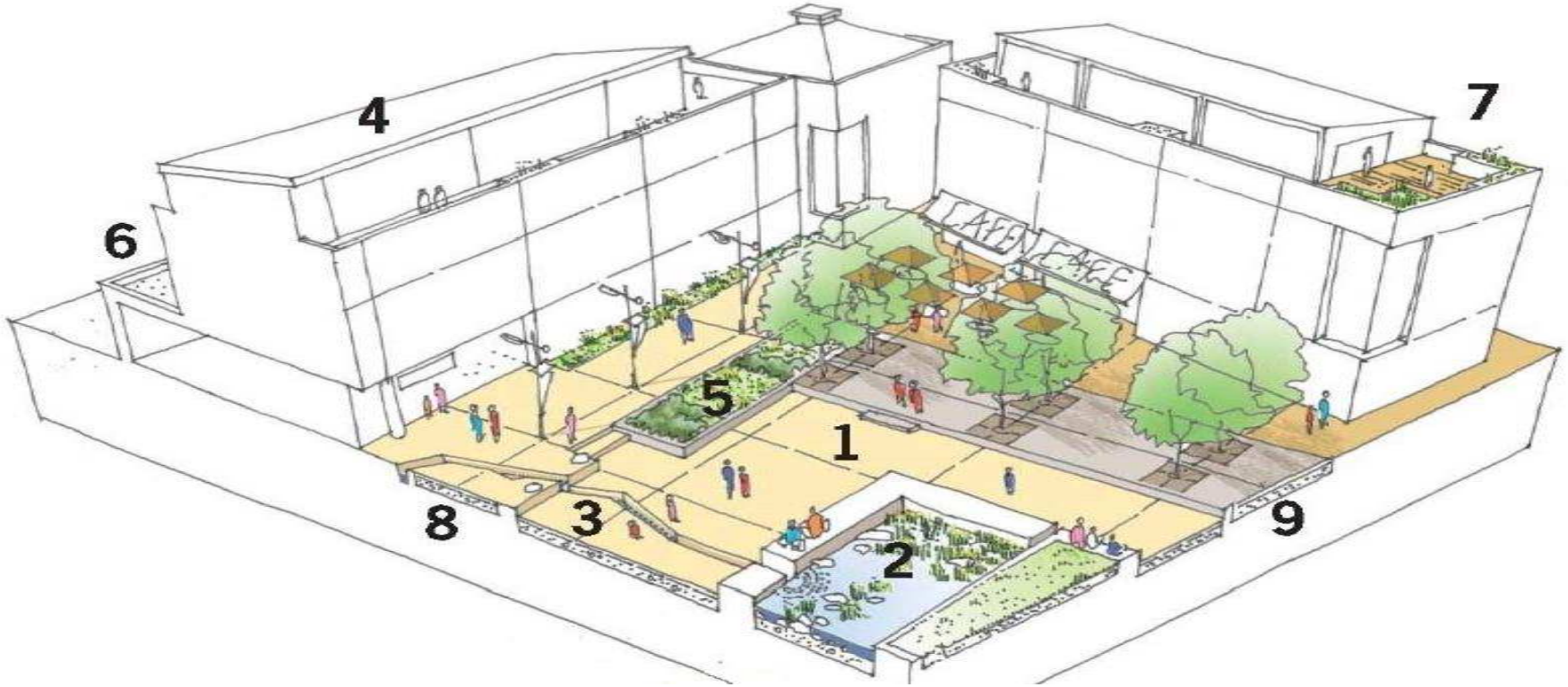
Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Design SuDS to match the density of developments

6.8.31 Limited space is often cited as a reason for not including SuDS, which is not acceptable as solutions do exist. Ideally, initial layout should consider how source control and localised SuDS features can be sized and located to provide adequate attenuation and treatment of runoff from high density areas. It is still possible to use SuDS in high density developments, but design needs to be suitable. Source control measures like green roofs and rainwater harvesting are strategies to reduce runoff. Additionally, building downpipes can be altered or disconnected to feed into gardens, soakaways or permeable paving. In high density courtyards and streets there is also potential to incorporate bio-retention features and planted rills. Figure 6.13 to Figure 6.15 demonstrate how SuDS can be incorporated into developments of varying densities.

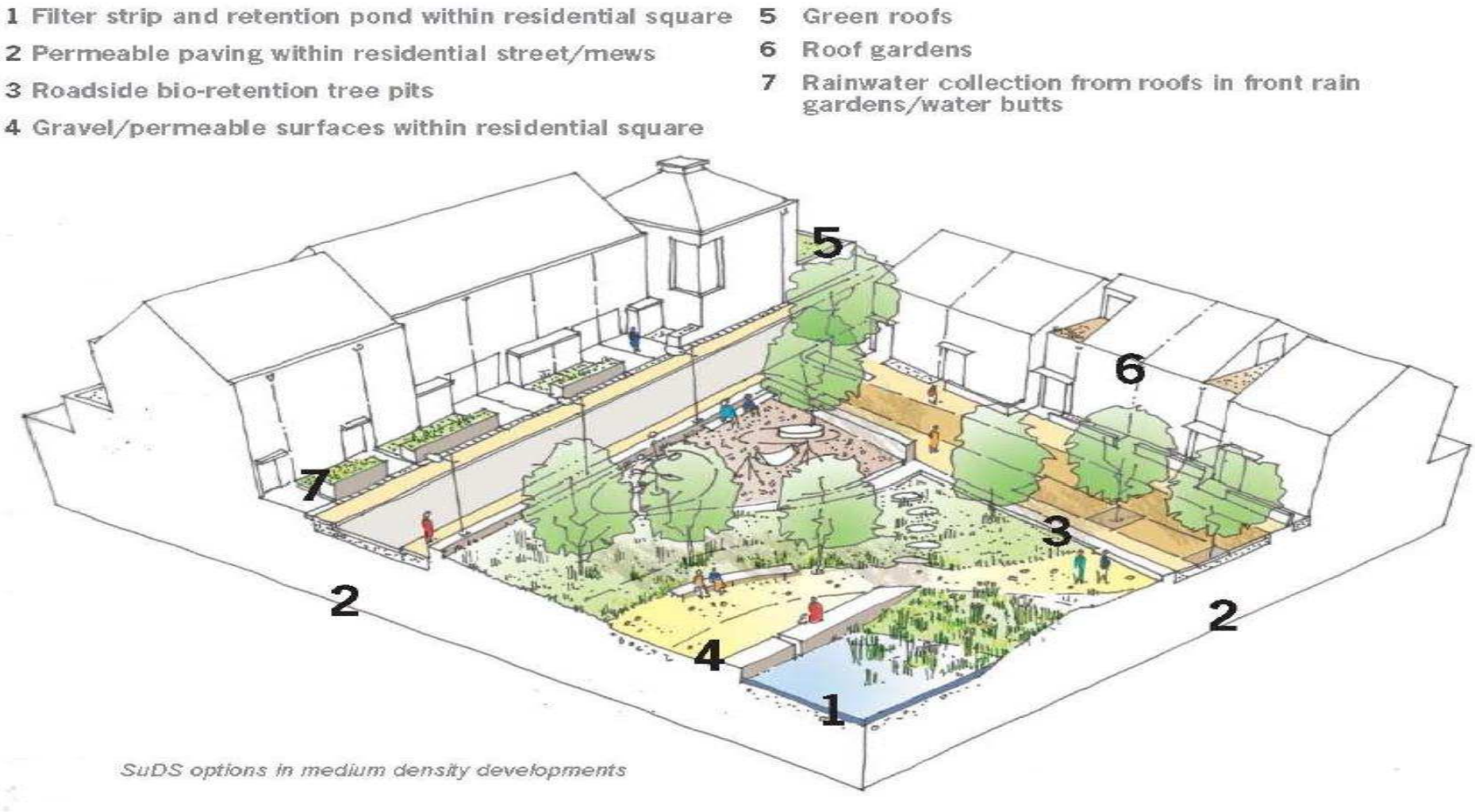
Figure 6.13: SuDS options in high density developments.

1 Urban square with permeable paving
2 Retention pond with integrated seating
3 Rill within pedestrianised shopping street
4 'Brown' roofs within town centre
5 Rain garden/planted bio-retention element
6 Green roofs
7 Roof gardens
8 Permeable paving within street
9 'Bio-retention tree pits within square



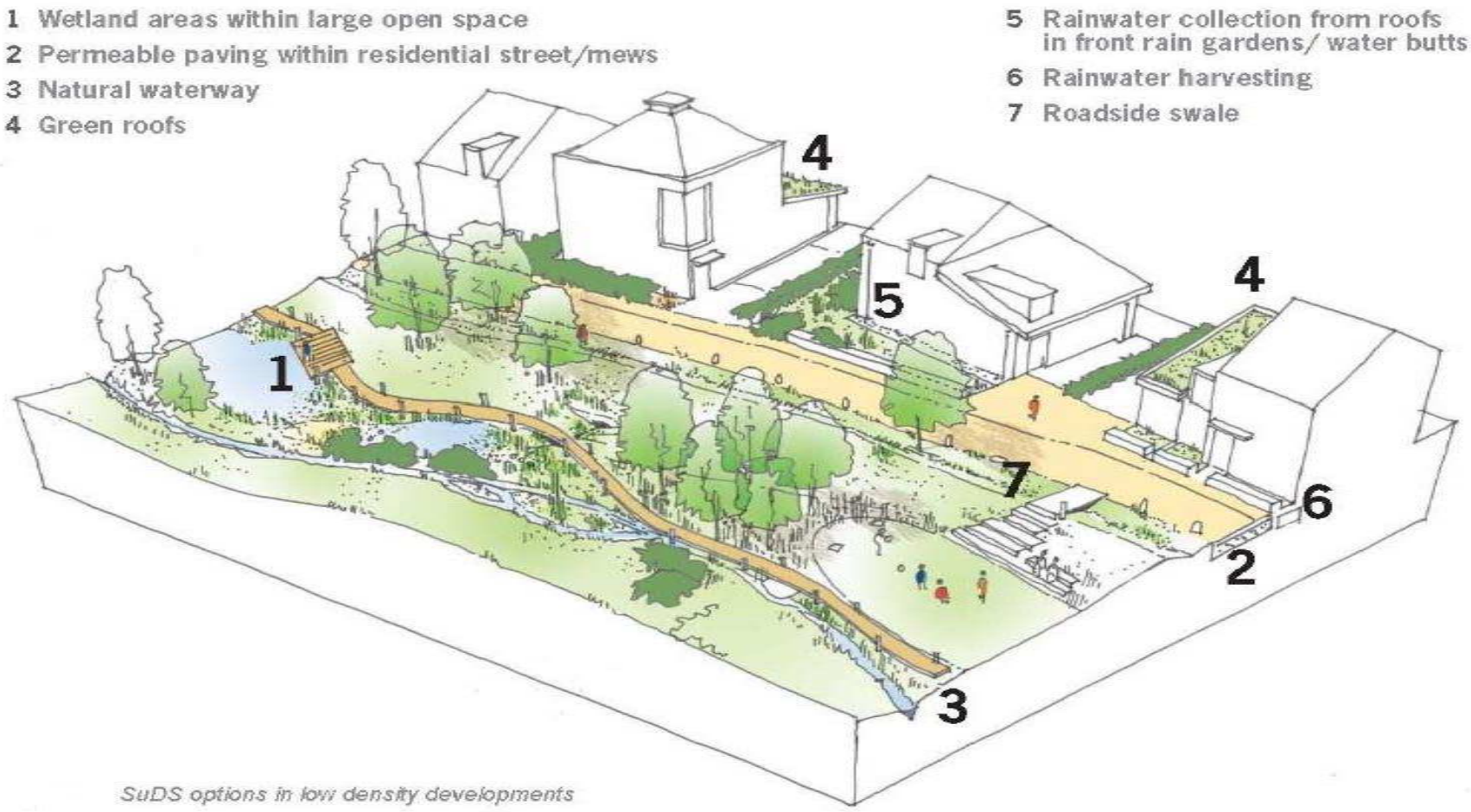
Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Figure 6.14: SuDS options in medium density developments



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Figure 6.15: SuDS options in low density developments

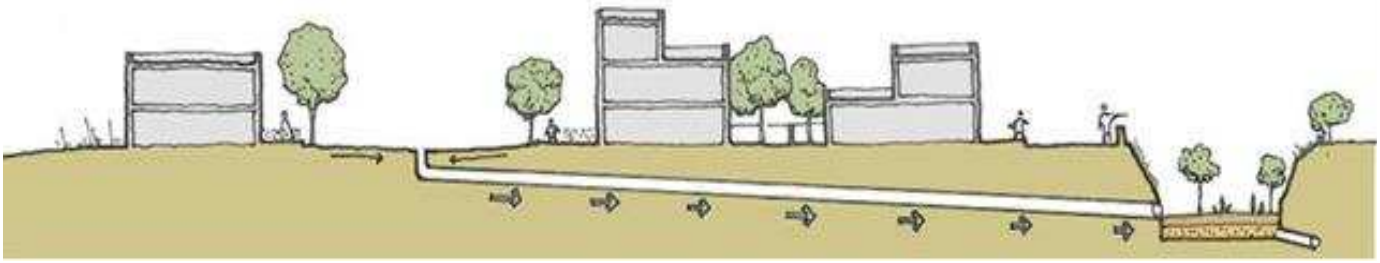


Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Design SuDS for flat sites

6.8.32 Drainage is particularly important on flat sites that do not have the opportunity to take advantage of gravity. Hydraulically efficient kerbs should be designed to channel water directly onto above ground SuDS, before draining to underground storage, or a piped network. Alternatively, roadside swales located within the road verge with flush kerbs can enable surface water to discharge directly into the swale, where it is pre-treated before discharging to a SuDS feature downstream, such as a retention pond, rain garden, or wetland. By keeping water on the surface as much as possible, deep downstream management features can be avoided. Deep features are undesirable due to increased excavation, the potential need for unnecessary pumping and the requirement for mitigation measures. Figure 6.16 demonstrates the negative impact a piped system can have on flat sites.

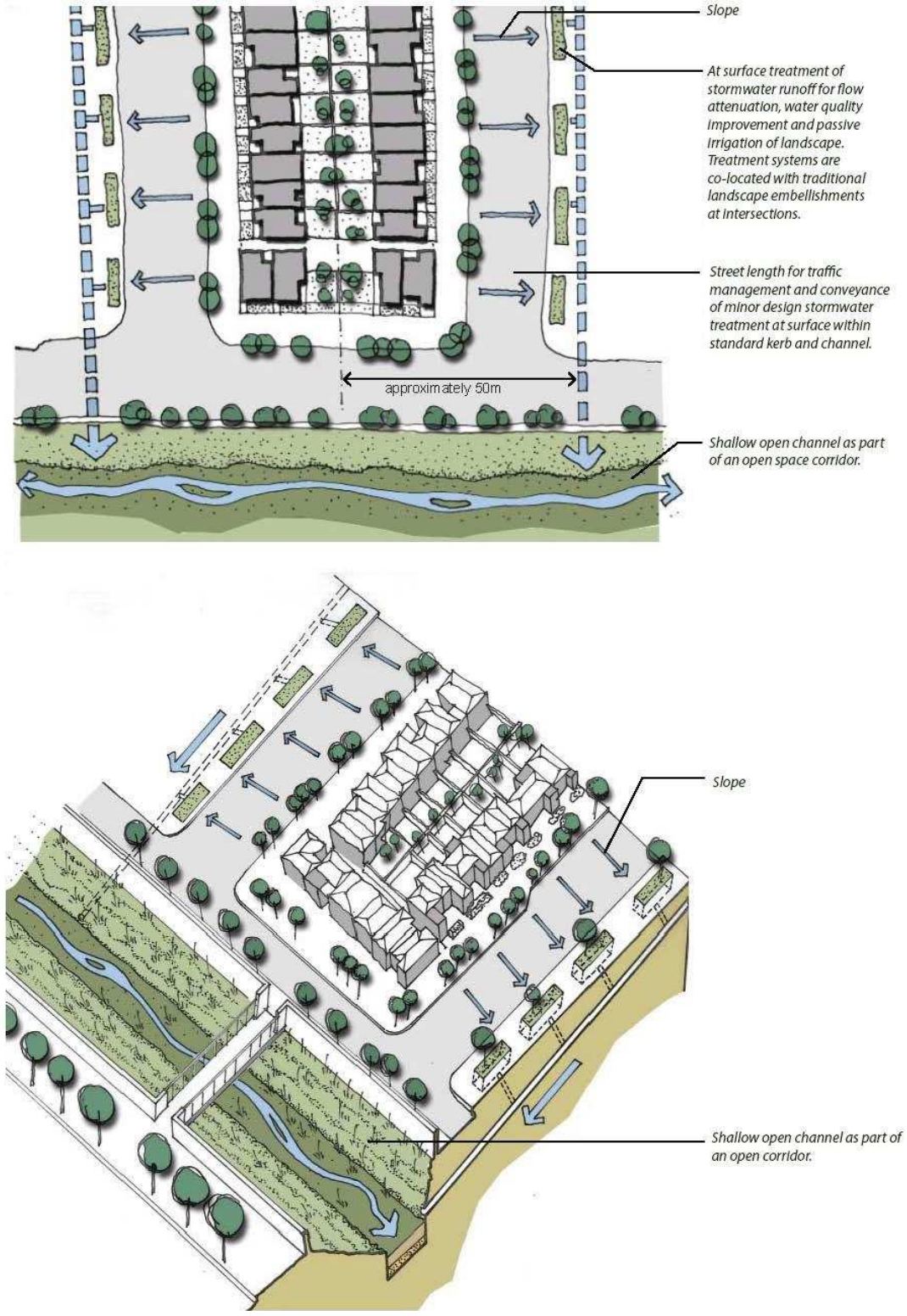
Figure 6.16: Negative impact of piped drainage on a flat site



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

6.8.33 Figure 6.17 shows how SuDS could possibly be incorporated into a flat, urban site.

Figure 6.17: Possible urban layout for a flat site



Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Design industrial and agricultural sites to incorporate SuDS

6.8.34 Industrial and agricultural sites often have larger volumes of water discharge with higher levels of pollutants, and as such they require special attention. The best strategy is to separate water discharging from work areas, car parks and roofs. Water runoff from high-risk work areas should be separated into interceptor tanks and treated as industrial waste. This separation is vital to ensuring the surface water from non-work areas of the site that do not have the same contaminants, can be treated similarly to surface water runoff from residential and commercial properties. Additional treatment stages are required where runoff is being drained from higher contamination risk area, such as car parks. Each site should be designed based on the risk posed. Figure 6.18 demonstrates how SuDS can be incorporated in an industrial setting.

Figure 6.18: Incorporating SuDS on industrial sites

Source: Woods Ballard, B., et al (2015) The SuDS Manual, CIRIA, C753

Design standards and designing for exceedance

6.9.1 In a new development there should be no flooding of any properties for a 1 in 100 annual probability (critical) rainfall event plus an appropriate allowance for climate change (refer to Chapter 3 for details of climate change allowances). In line with Sewers for Adoption, there should also be no water outside of the designed system for a 1 in 30 annual probability (critical) rainfall event.

6.9.2 Consideration should also be given as to how the system performs for events that exceed the design capacity of the system or if a part of the system blocks or fails. The design of the site must also ensure that flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in exceedance routes that minimise the risks to people and property and avoids creating hazards to access and egress routes. Guidance on how to apply this can be found in Designing for Exceedance in Urban Drainage: Good Practice (C635).

Designing for water quality

6.10.1 SuDS have a considerable advantage over traditional drainage as a well-designed system will provide a level of treatment to surface water runoff before it is discharged into the receiving water body. It does this through a number of processes including filtration, settlement, and uptake by plants. For example; permeable paving is very effective at removing a wide range of pollutants from runoff, so improving water quality. The pollutants may either remain on the surface or be flushed into the underlying pavement layers, where many are filtered and trapped and degrade over time.

6.10.2 To protect the water quality of receiving waters, runoff from a site should be of an acceptable water quality to help ensure current and/or future water quality objectives are not compromised. As there can be a wide range and level of contaminants contained within surface water runoff, water quality needs to be managed using a risk-based approach, facilitated by the SuDS management train. The SuDS management train refers to a variety of SuDS components in a series that provide treatment processes to deliver a gradual improvement in water quality as water moves through the system.

6.10.3 The size and number of treatment stages required is based on the level of pollution entering into the system. For example, industrial sites will contain a higher level of pollutants within surface water runoff than from a small residential road. Please refer to Chapter 4 of the SuDS Manual (CIRIA, C753) for further detail on designing SuDS for water quality.

Designing a safe environment

6.11.1 All SuDS schemes should be designed as a safe environment that can be accessed and enjoyed by residents and visitors. The use of fencing and barriers should not be the approach to making SuDS features safe, particularly in residential developments. It is however recognised that there may be cases in less sensitive environments (such as industrial areas) where steeper earthworks and safety measures are appropriate. The SuDS features themselves should be designed to be safe through measures such as:

- Following the topography of the site - this will minimise the depth of the features throughout the development.
- Ensuring gently sloping sides and that they are planted with vegetation to act as a barrier to unintended entry into the water.
- Ensure open areas of water are obvious to residents and visitors and any vertical drops are easily identified. The use of safety rings are generally not appropriate for SuDS as they are designed to be dropped vertically and not thrown any distance as they are heavy and awkward to handle. Their use should be limited to areas where they will be effective.
- Use of appropriate signage in the right locations. These should not be used as a replacement for appropriate design.

6.11.2 Further information can be found in the CIRIA publication, The SuDS Manual (C753) and the RoSPA publication Safety at Inland Water Sites.

Developing a surface water drainage strategy

Masterplanning

6.12.1 For larger developments a masterplan will be necessary. It is at this stage the SuDS layout (taking into account flow routes, topography, geology and green space) and proposed maintenance of the system should be determined whilst ensuring a safe design and mitigation of flood risk (see Figure 6.1). Seeking advice at the earliest opportunity from the relevant FRMAs will help avoid any costly issues or redesigns at a later stage. Effective master planning should ensure a robust, viable and cost-effective scheme from the outset, where objectives of the development are informed by the SuDS scheme and vice versa.

Outline planning application

6.13.1 When an outline planning application is required the applicant should include an outline drainage strategy with the planning application. It should include enough design information that demonstrates the conceptual surface water drainage design across the site. The assessment submitted should outline the existing surface water run-off rates from the site and an indication of post development run-off rates with associated storm water storage requirements. SuDS should have been appropriately considered, taking into account site specific drainage requirements and constraints, and incorporated effectively into the overall masterplan. APPENDIX VIII includes a drainage pro-forma to be followed to ensure the correct information is included within the drainage strategy.

Full planning application or reserved matters application

6.13.2 Many developments move straight to a full planning application following pre-application discussions with the relevant FRMAs. At this stage applicants will also be expected to submit a detailed surface water drainage strategy with the planning application. Whilst most topics will have been covered to some degree in the outline drainage strategy (if applicable) the applicant will be expected to provide more detail at this stage. The strategy should demonstrate that opportunities to integrate SuDS have been maximised and where obstacles to their use do persist this should be fully justified within the report. Where proposing to discharge into a third party asset (such as a watercourse or public sewer), appropriate permissions and required consents should have been discussed with the asset owner and legal easements may need to be provided.

6.13.3 The key information a surface water drainage strategy must contain includes:

- How the proposed surface water scheme has been determined following the drainage hierarchy;
- Pre-development runoff rates;
- Post development runoff rates with associated storm water storage calculations
- Discharge location(s);
- Drainage calculations to support the design of the system;
- Drawings of the proposed surface water drainage scheme including sub catchment breakdown where applicable;
- Surface water and sustainable drainage systems
- Maintenance and management plan of surface water drainage system (for the lifetime of the development) including details of future adoption;

- Completed drainage pro-forma – the applicant must ensure that the surface water strategy contains the appropriate level of information in relation to the points covered in the pro-forma.

6.13.4 Note that the size and complexity of the site will determine how much information is included within the surface water drainage strategy. However using the pre-application design checklist and drainage pro-forma in APPENDIX VIII will ensure the right matters are covered with the appropriate level of detail.

Approval of SuDS

6.14.1 SuDS are approved as part of the planning application for a development. It is the LPAs responsibility to ensure that the design submitted as part of either an outline or full planning application is robust and contains adequate detail to ensure that the SuDS are appropriate for the development and will be adequately maintained throughout their lifetime. The LPA may also seek expert advice from the LLFA as part of this process. For major developments national guidance for SuDS can be found in the PPG, additionally the Non-Statutory Technical Standards for Sustainable Drainage Systems provides the high level principles all SuDS designs must follow.

Adoption and maintenance of SuDS

6.15.1 It is recommended that a statutory organisation takes on the role of maintaining the SuDS as this will guarantee maintenance of the drainage system in perpetuity. However where this is not possible, alternative bodies such as private management companies may also be considered able to maintain SuDS, provided that a suitable maintenance plan has been submitted to and agreed with the LPA. Statutory organisations may include organisations such as the local authority, Severn Trent Water, the Lower Severn IDB and Parish Councils. For SuDS serving the highway these should be discussed with the Highways Authority at Gloucestershire County Council (GCC) to ensure suitability for adoption.

6.15.2 Open space provision within development sites is a normal planning requirement and offers suitable landscaped areas for the inclusion of a wide range of SuDS features (e.g. ponds, basins and swales). These features can enhance the nature conservation and amenity value of the site, although a primary consideration should be the effectiveness and maintenance of the SuDS.

6.15.3 Where the Council is adopting the open space provision, this could include adoption of the SuDS features within the open space (seek clarification from local authority). In adopting these features, a range of issues will need to be addressed:

- The primary purpose of the SuDS features relate to drainage. If the open space is to be used for other purposes, such as nature conservation or as a play area, this must not conflict with the effective working and maintenance of the SuDS.
- Safety issues will come into play if a body of water is involved.
- There is a need to ensure that a long-term, effective maintenance regime is in place along with a long term habitat management plan where appropriate. Details of these ongoing commitments will normally be agreed as part of the planning application process.

6.15.4 If the applicant is minded to choose Severn Trent Water as the appropriate body for SuDS adoption they should ensure the proposed design meets their adoption criteria, referencing relevant guidance and advice where appropriate and that Severn Trent Water have confirmed that they will adopt the SuDS for the whole site.

6.15.5 Section 106 of the Town and Country Planning Act 1990 provides a suitable mechanism by which properly designed SuDS features can be transferred into the management and maintenance responsibilities of a local authority or other statutory organisation. The local authority should secure a financial mechanism through commuted sums, identified in the adoption agreement, to facilitate maintenance and management requirements. This would allow adoption of the areas within an acceptable timeframe without placing additional burdens on the local authority's resources. Clarification will also need to be sought from the Council on whether SuDS are delivered through the Community Infrastructure Levy or Section 106.

6.15.6 In certain circumstances where a management company is required to maintain the SuDS, a legal agreement tied to the title of the property will need to be agreed with the LPA (usually via a Section 106 agreement). If this is the case then discussions will need to take place during the pre-application stage of the development so that assurances can be made that this is the correct option for the development.

6.15.7 Evidence should be provided by the applicant on the suitability and experience of the management company during this process and how the Council can be assured that the maintenance will be carried and who is responsible for any failure to maintain, repair or replace. Such evidence will be expected as part of a SuDS Maintenance Plan either

forming part of a planning application submission or submitted to discharge associated conditions.

6.15.8 The Developer will need to demonstrate that sufficient funding will be provided to maintain and replace the SuDS systems in perpetuity which, for this case, is taken as the design life of any structures which must be 120 years.

CHAPTER 7 – WATER MANAGEMENT, RECYCLING, SUPPLY AND POLUTION CONTROL

7.1 WATER SUPPLY AND INFRASTRUCTURE

Water Supply

7.1.1 Groundwater resources are a vital component of potable water supplies; once polluted, the damage can be irrevocable. They can also have an impact on sites of wildlife significance. Development proposals that significantly threaten this resource will not be permitted. Development proposals will, where appropriate, need to demonstrate that they can be implemented without detriment to the quality or quantity of existing water and the wider environment. Tewkesbury Borough Council will have regard to current Environment Agency guidance on the protection of groundwater.

Foul Drainage

7.1.2 When preparing sewerage proposals for any development, the first presumption will be to provide a system of foul drainage discharging into a public sewer. This should be achieved in consultation with the statutory sewerage undertaker for the area. Only if, taking into account the cost and/or practicability, it can be shown to the satisfaction of the local planning authority that connection to a public sewer is not feasible, a package sewage treatment plant incorporating a combination of treatment processes will be considered. The plant should offer full treatment (including secondary and if necessary tertiary treatment) with the final effluent discharge from it meeting the standard and conditions set by the Environment Agency where applicable. Proposals for package treatment plants should also set out clearly the responsibility and means of operation and maintenance to ensure that the discharge consent is not likely to be infringed in the life of the plant. Such provision may be adopted by the statutory sewerage undertaker under section 104 of the Water Industry Act 1991, subject to certain criteria being met. Severn Trent Water are likely to be issuing guidance on adoption of treatment plants in the near future.

7.1.3 Only if it can be clearly demonstrated that the sewerage and sewage disposal methods referred to above are not feasible, will a system incorporating septic tank(s) be considered. Applications for planning permission should be supported by an assessment of the proposed use of septic tanks, to confirm that there will be no adverse effects. This assessment should focus on the likely effects on the environment, amenity and public health. It should include a thorough examination of the impact of disposal of the final

effluent, whether discharged to a watercourse or disposed of by soakage into the ground. An Environmental Permit maybe required from the Environment Agency for certain types of non-mains drainage. Further guidance on this is available from the Environment Agency advice document **'Guidance for the registration of small sewage effluent discharges'**.

Development adjacent to watercourses

7.1.4 Any riverside developments should leave a minimum **8 metre** wide undeveloped buffer strip, to preserve the river and its floodplain as an enhancement feature and to allow for routine maintenance. Such developments should also have a maintenance strategy for clearing and maintaining the channel, and any structures such as trash screens and bridges. Development proposals should also consider opportunities to undertake river restoration and enhancement to make space for water.

Maintenance of existing structures and flood storage areas

7.1.5 Existing flood water storage areas should be maintained and safeguarded from development. New development should also be designed not to prohibit the maintenance and functioning of structures required for flood risk management purposes.

7.2 WATER RECYCLING

7.2.1 Water recycling is a key component of integrated water cycle management. The safe implementation of water recycling can help to reduce inputs of nutrients and other contaminants to surface waters, conserve drinking water and provide economic and social benefits to communities. It can also reduce demand for water provided by water companies during periods of drought. SuDS need to take into account the possibilities of re-using and recycling surface water in as many ways as feasible.

7.2.2 The aim in Tewkesbury Borough is to encourage and support water recycling that is safe, environmentally sustainable and cost-effective by encouraging the use of rainwater harvesting and grey water recycling methods in new development, where practical and feasible. These methods are only effective outside floodplains. Applicants should give consideration to the following measures.

7.2.3 **Rainwater Harvesting** is described as being water collected from roofs via traditional guttering, through down pipes to an underground tank. This water is then delivered on demand by an in-tank submersible pump direct to toilets, washing machines and outside tap use. More than 50% of mains water can be substituted by rainwater in this way.

Rainwater harvesting can be incorporated on development sites for uses such as car washing, watering gardens and topping up ponds or wetland habitats.

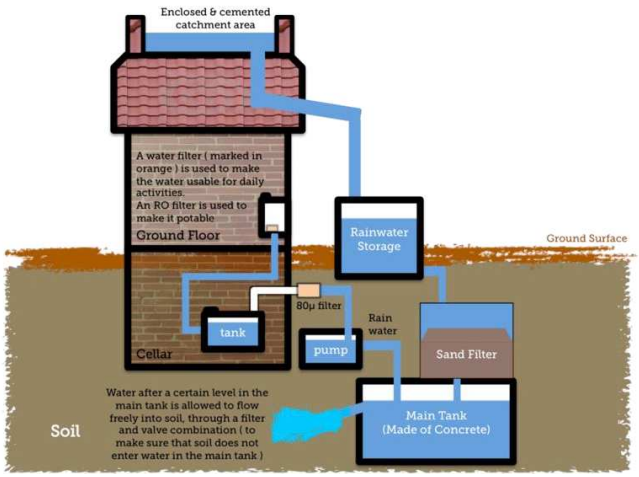


Fig 2: Rainwater Harvesting System

7.2.4 **Greywater Recycling** is typically defined as being water from the bath, shower and wash hand basin. The ideal situation for grey water is in living accommodation where sufficient amounts are generated daily for reuse in toilets, the washing machine and any outside tap. Greywater recycling systems can be incorporated on development sites for non-potable uses such as for flushing toilets.

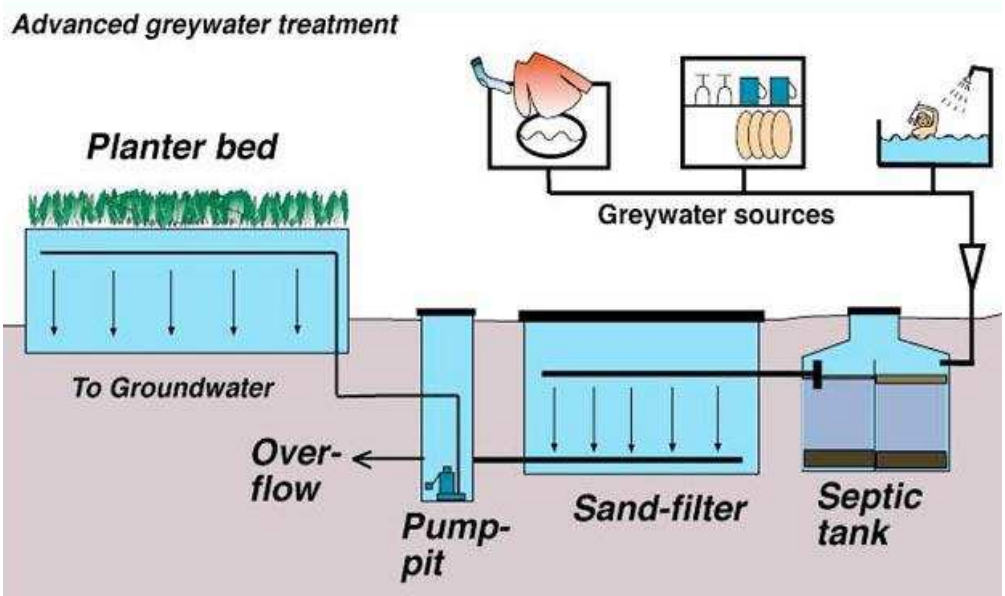


Fig 3: Advanced Greywater Treatment System

Methods and Maintenance of Rainwater Harvesting and Greywater Recycling Systems

7.2.5 Consideration should be given to the use of more efficient domestic and non-domestic appliances, such as low flush or compost toilets, waterless urinals, reduced flow rates for showers, low-flow or spray taps and water meters with pulsed output (levels of water use should be consistent with 'very good' standards for BREEAM and Eco-Homes on new build wherever possible).

7.2.6 In addition, water recycling measures should be considered when designing any landscaping scheme for residential or non-residential development. Such measures could include working with existing natural vegetation, selecting drought-resistant plants or low water use landscaping / gardens and using automatic drip irrigation systems.

7.2.7 Applicants should also consider the installation of water meters to link water habits to a charging structure, thus encouraging occupants to consider their individual wastage. Further information and illustrations on water conservation methods and techniques can be found at **APPENDIX IV**.

7.2.8 The facilities for both rainwater harvesting and grey water re-use require maintenance to ensure their effectiveness and to prevent deterioration of water quality. Future maintenance arrangements should be addressed in the earliest project planning stages.

7.3 WATER QUALITY AND POLLUTION CONTROL

7.3.1 Paragraph 109 of the National Planning Policy Framework states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution. The Council will seek to ensure that new developments achieve this objective.

Causes of water pollution

7.3.2 Some traditional methods of building can cause poor water quality as surface water run-off can contain a variety of pollutants. The poor water quality associated with new developments may also have direct negative impacts on biodiversity.

7.3.3 Large areas of hard landscaping can result in surplus run-off, exacerbating flooding, causing pollution and erosion problems and reducing natural infiltration. This can directly lead to water quality problems, by accumulating pollutants as water runs over land.

Runoff from roads will also contain heavy metals and hydrocarbons and run-off from farmland is more likely to contain nitrates and sediment. These can have serious implications for water quality and amenity.

Possible solutions for minimising pollution

7.3.4 Although some pollution arising from surface water runoff may be unavoidable and water treatment at every outfall may be impractical, moderating flows and filtering runoff through SuDS can deliver significant reductions in the impact on the water resource by means of ground infiltration, sub base storage and filtration.

7.3.5 Applicants may be required to use mitigation measures to minimise resultant pollution within new development. Supporting documentation accompany planning applications for major developments should explain how contaminated water arising during the construction process will be addressed.

Pollution reduction methods

7.3.6 Methods that can help to reduce pollution include infiltration trenches, basins, ponds, wetlands, filter drains and permeable surfacing.

7.3.7 Infiltration trenches comprise stone filled reservoirs to which storm water runoff is diverted, and from which the water gradually infiltrates the ground. Infiltration is unlikely to be successful in the clay soils of Gloucestershire, and a soil analysis will therefore be required for any major development proposal to demonstrate whether this approach would be effective.

7.3.8 Ponds and wetlands remove pollution by a range of chemical, physical and biological processes. Pollutant removal is by absorption, filtering and microbial decomposition in the surrounding soil. Systems can be designed which successfully incorporate both infiltration and filter systems.

7.3.9 Permeable paving can maximize opportunities for using space in a multi-functional way requiring no additional land take. They are not solely infiltration systems, do not have onerous maintenance requirements and can accommodate heavier traffic (including construction traffic). In addition, there is also evidence to show whole life costs can be significantly lower than a conventional ‘pipe’ system, as the future maintenance requirement is low and they negate the need for grates, gullies, expensive flow control structures, extensive lengths of pipework, oil separators etc.

CHAPTER 8 – WATER MANAGEMENT STATEMENTS

8.1 National planning policy only requires planning applications of a certain scale and nature to be accompanied by Flood Risk Assessments. However, given the severity of river and surface water flooding in Tewkesbury Borough and the potential impact of cumulative development, it is considered necessary to require all applications except those proposing minor development[1] to be accompanied by detailed information in relation to the flooding. This information shall be submitted in the form of a Water Management Statement (WMS), which will be a validation requirement for such schemes.

8.2 The WMS is as a crucial element in managing flood risk and it is advised that appropriate details should be submitted to and agreed with the Council's Development Management team prior to the submission of a planning application. The WMS should involve several stages:

1. Prior to land acquisition, the developer should undertake an assessment of the site in terms of the requirements set out in this SPD in order to assist appraisal of site development constraints and land acquisition costs.

2. The level of detail required within the WMS will depend on the scale and type of development and individual site conditions. The level of information should be agreed with the Council's Development Management team at an early stage.

3. Evaluation of the submitted WMS will be undertaken by the Council in conjunction with the other regulatory bodies, including the Environment Agency and the LLFA.

[1] The term 'minor development' is the same as that defined within the Planning Practice Guidance and means:

- minor non-residential extensions: industrial/commercial/leisure etc extensions with a footprint less than 250 square metres.
- alterations: development that does not increase the size of buildings eg alterations to external appearance.
- householder development: For example; sheds, garages, games rooms etc within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling eg subdivision of houses into flats.

Water Management Statement Requirements

All outline and detailed planning applications (including reserved matters) which fall outside of FRA requirements, except those proposing minor development, shall, as a minimum, be accompanied by a Water Management Statement.

The Water Management Statement (WMS) shall comprise a report, being proportionate to the scale and nature of development proposed, outlining the water cycle issues relevant to a development proposal and suitable means of providing for the sustainable drainage of the site in the long term. The WMS shall also explain how both foul and storm water sewage from a development will be addressed. The WMS should include details of existing drainage systems and problems, infiltration, groundwater, surface water flow, foul and storm water disposal and any other drainage related flooding issues that may relate to the development.

A feasibility study evaluating the means of incorporating SuDS as part of the proposed development should also be included, as will a study of local soils and geology supported by site investigation results. This information will assist in developing a proposal for SuDS to be incorporated within the proposed layout of the development. The developer must be able to demonstrate that the technique is suitable for the development and provide supporting evidence to back up their calculations. The WMS should also assess the feasibility of incorporating rainwater harvesting and grey water recycling, and the appropriate measures for collecting and reusing water should be incorporated into a development.

CHAPTER 9 – MANAGING AND MITIGATING FLOOD RISK

9.1 Residual risks are those remaining after applying the sequential approach and mitigating measures. Applicants will be required to assess flood risk for their development, propose measures to mitigate it and show that any residual risks can be safely managed. However, resilience measures should not be used to justify development in inappropriate locations.

9.2 The following measures can help mitigate flood risk and will be expected to be taken into account in new development where appropriate (also see APPENDIX V):-

Flood Mitigation Measures

Floor levels in new residential and non-residential development

Floor levels for habitable rooms in new development must be set at 600 mm or more above the flood level predicted for the 1:100 year flood event (plus climate change) in order to reduce the potential risk to life and damage to property. All levels should be presented as an accurate height Above Ordnance Datum, Newlyn (mAOD)

Protection of flood flow routes and culvert policy

Development should ensure it does not inhibit the function of flood flow routes to convey floodwater as efficiently as possible across floodplains. Culverting of watercourses will be strongly resisted and existing culverts opened up where possible.

Use of flood resilient construction in new development

Where appropriate, new development should be built with flood resilient materials and construction methods, demonstrating that as a minimum, the mandatory elements of the Code for Sustainable Homes are met. Flood resilient construction allows buildings to recover quicker than conventional buildings following a flooding event.

Flood-resistant construction can prevent entry of water or minimise the amount that may enter a building. This form of construction should be used with caution and accompanied by other resilience measures as effective flood exclusion may be reliant on elements, such as barriers to doorways, being maintained in a good state. Buildings may also be damaged by water pressure or debris being transported by flood water. This may breach flood-excluding elements of the building and permit rapid inundation.

Provision of safe access and egress routes in new development

For residential developments to be classed as 'safe', as a minimum dry pedestrian access should be provided to and from the development without crossing through the 1 in 100 year plus climate change floodplain. Vehicular access to a site should also be achievable, taking into account extreme events. The production of flood plans are also recommended to aid evacuation and rescue during flood events, which should satisfy the concerns of the local authority emergency planner and the emergency services. Access should also be considered for other types of development.

Site layout

9.3 The site layout of any proposed development should take into consideration areas of flood risk present on the site and this should influence the choice of where to locate elements of the proposed development including Sustainable Drainage Systems (SuDS) (see Chapter 7). This is in line with the Sequential Approach to flood risk as outlined in Chapter 5. If, following the application of the sequential test, areas of flood risk cannot be avoided then the least vulnerable elements of the proposed development should be located to coincide with the highest level of flood risk.

9.4 The inclusion of good quality green infrastructure (including trees and other vegetation) within a development master plan has the potential to significantly increase the profile and profitability of developments. Low lying ground can be designed to maximise benefits by providing flood conveyance and storage as well as recreation, amenity and environmental purposes. Where public areas are subject to flooding easy access to higher ground should be provided. Structures, such as street furniture and play equipment, provided within the low lying areas should be flood resistant in design and firmly attached to the ground.

9.5 Site layout does not only have to cater for the flood risk on the site but can also accommodate flood water that may contribute to a problem downstream. For example, where a proposal has a watercourse flowing through which contributes to flooding downstream in the existing community or further downstream within an adjacent community, the proposed development should offer flood risk betterment by holding back flood flow peaks within the site in a green corridor and by making space for this water. This is a proactive approach to flood risk management where new developments offer enhancements to the surrounding area. All developments with watercourses identified within their site must consider this approach.

9.6 The site layout should also respond to the characteristics of the location and the nature of the risk. In some areas it is more appropriate to make space for water and allow controlled flood water onto areas of the development site. This is particularly relevant to riverside developments where extreme events can be catered for in multi-function open space areas (likely to form part of the green infrastructure provision) that would normally be used for recreation but infrequently can flood. The use of such features in these areas

should be appropriate and compatible with the frequency, depth and duration of any flooding. However, signage clearly explaining the use of such areas for flood control and recreation should be fully visible so that infrequent flood inundation does not cause alarm.

CHAPTER 10 – BIODIVERSITY

10.1 The 2006 Natural Environment and Rural Communities Act (NERC) places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. A key purpose of this duty is to embed consideration of biodiversity as an integral part of policy and decision making.

10.2 Paragraph 109 of the NPPF also states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

10.3 Those proposing development should therefore seek opportunities to use multi-purpose open space for amenity; incorporate wildlife habitat and flood storage uses and need to consider how flooding and biodiversity can be jointly managed. Opportunities should always be explored to recreate more natural conditions along watercourses. For example, de-culverting, restoring or re-profiling rivers to promote ecological improvements and integration with wider green/blue infrastructure networks.

10.4 Further guidance on biodiversity and green Infrastructure can be found in the natural conservation policies within the **Tewkesbury Borough Local Plan to 2011** and policies SD10 and INF4 of the **emerging Joint Core Strategy.**

10.5 In accordance with the NPPF and the 2006 Act, developers will be required to demonstrate that where practicable, SuDS schemes will benefit water habitats and biodiversity. The council therefore expects features such as ponds and wetlands to be planted to enhance biodiversity.

10.6 The planting of native species appropriate to the local conditions will be favoured and where appropriate the mix of planted species should aim to create habitats that contribute to the local Biodiversity Action Plan.

10.7 Some common landscape and ecological design requirements may have to be adapted slightly to ensure that the SuDS can function effectively. It will also be important that the types of planting proposed are considered in line with the design of the SuDS features. For example, the soil moisture profile may be very different at the top of a swale's bank to the bottom and this will need to be taken into consideration to ensure the success of both the plants and the operation of the drainage feature.

10.8 Opportunities should also be explored to recreate more natural conditions along watercourses. Examples of this include: de-culverting; restoring or re-profiling rivers to promote ecological improvements; removal of barriers to fish migration; integration with wider green/blue infrastructure networks; setting back development from watercourses to enable access and enhancement; and protection of sensitive locations.


Tewkesbury
Borough Council

APPENDIX I - COMMONLY USED TERMS

Attenuation
Reduction of peak flow and increased duration of a flow event.

Balancing pond
A pond designed to attenuate flows by storing runoff during the peak flow and releasing it at a controlled rate during and after the peak flow has passed. The pond always contains water. Also known as wet detention pond.

Basin
Flow control or water treatment structure that is normally dry.

Bio retention area
A depressed landscaping area that is allowed to collect runoff so it percolates through the soil below the area into an under drain, thereby promoting pollutant removal.

BRE Environmental Assessment Method (BREEAM)
The most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable development and demonstrates a level of achievement.

Catchment
The area contributing surface water flow to a point on a drainage or river system. It can be divided into sub-catchments.

Construction Industry Research and Information Association (CIRIA)
CIRIA is a member-based research and information organisation dedicated to improvement in the construction industry.

Climate Change
Any long-term significant change in the average weather that a given region experiences. Average weather may include average temperature, precipitation and wind patterns.

Code for Sustainable Homes
The Code measures the sustainability of a new home against categories of sustainable design, rating the whole home as a complete package.

Combined sewer
A sewer designed to carry foul sewage and surface runoff in the same pipe.

Detention basin
A vegetated depression, normally dry except after storm events constructed to store water temporarily to attenuate flows. May allow infiltration of water to the ground.

Department for Environment, Food and Rural Affairs (DEFRA)
UK Government Department that champions Sustainable Development, helping Government as a whole to deliver economic, social and environmental sustainability.

Development Plan Document (DPD)
The new system of local planning brought in under the Planning and Compulsory Purchase Act 2004, the term 'development plan document' covers any Local Development Document that is part of the development plan. A development plan document has to be independently tested by a Government inspector and carries full weight in relation to planning applications, which distinguishes it from a supplementary planning document.

Eco-homes
Eco-homes is a version of BREEAM for homes. It provides an authoritative rating for new, converted or renovated homes, and covers houses, flats and apartments.

Environment Agency
Are a UK non-departmental public body of DEFRA with the principle aim of protecting and enhancing the environment to make a contribution towards the objective of achieving sustainable development. The Agency has principle responsibility for river flooding.

Evapotranspiration
The process by which the Earth's surface or soil loses moisture by evaporation of water and by uptake and then transpiration from plants.

Exception Test
If, following application of the Sequential Test (see below), it is not possible for proposed development to be located in zones of lower probability of flooding, the Exception Test should be applied. For the Exception Test to be passed:

- it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; and
- 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.

Filter drain
A linear drain consisting of a trench filled with a permeable material, often with a perforated pipe in the base of the trench to assist drainage, to store and conduct water, but may also be designed to permit infiltration.

Filter strip
A vegetated area of gently sloping ground designed to drain water evenly off impermeable areas and filter out silt and other particulates.

Flood frequency
The probability of a flow rate being equalled or exceeded in any year.

Floodplain
Land adjacent to a watercourse that is subject to repeated flooding under natural conditions.

Flood Mitigation
Methods of reducing the effects of floods. These methods may be structural solutions (e.g. reservoirs) or non-structural (e.g. land- use planning, early warning systems).

Flood Risk Assessment (FRA)
An assessment of the risk of flooding, particularly in relation to residential, commercial and industrial land use. FRAs are required to be completed according to the NPPF alongside planning applications in areas that are known to be at risk of flooding.

Flood routing
Design and consideration of above-ground areas that act as pathways permitting water to run safely over land to minimise the adverse effect of flooding. This is required when the design capacity of the drainage system has been exceeded.

Flow control device
A device used to manage the movement of surface water into and out of an attenuation facility, e.g. a weir.

Fluvial flooding
Flooding from a main watercourse (brooks, streams, rivers and lakes etc) that occurs when the water features cannot cope with the amount of water draining into them, from the land. When rainfall is heavy and / or prolonged, a large amount of run-off reaches the rivers and eventually causes them to overtop their banks.

Grampian Condition
A "Grampian condition" is a planning condition attached to a planning permission that prevents the start of a development until off-site works have been completed on land not controlled by the applicant. E.g. off-site drainage works to a watercourse.

Greenfield runoff
This is the surface water runoff regime from a site before development, or the existing site conditions for brownfield redevelopment sites.

Green roof
A roof with plants growing on its surface, which contributes to local biodiversity. The vegetated surface provides a degree of retention, attenuation and treatment of rainwater, and promotes Evapotranspiration.

Greywater
Wastewater from sinks, baths, showers and domestic appliances. A Greywater system captures this water before it reaches the sewer (or septic tank system).

Groundwater
Water that is below the surface of ground in the saturation zone.

Highways Agency
The government agency responsible for strategic highways, i.e. motorways/trunk roads.

Hydrological
The occurrence, circulation, distribution, and properties of the waters of the earth and its atmosphere.

Impermeable surface
An artificial non-porous surface that generates a surface water runoff after rainfall.

Infiltration (to the ground)
The passage of surface water though the surface of the ground.

Infiltration (to a sewer)
The entry of groundwater to a sewer.

Infiltration device
A device specifically designed to aid infiltration of surface water into the ground.

Infiltration trench
A trench, usually filled with stone, designed to promote infiltration of surface water to the ground.

Lead Local Flood Authority (LLFA)
Established through the Flood and Water Management Act as the body responsible for managing local flood risk from surface runoff, ordinary watercourses and groundwater.

Local Highway Authority
A local authority (Gloucestershire County Council) with responsibility for the maintenance and drainage of highways maintainable at public expense.

Material Consideration
A legal term describing a matter or subject which is relevant (material) for a local authority to consider when using its powers under planning law in dealing with a planning application.

Microbial decomposition
The breaking down of complex molecules into constituent parts or elements by microorganisms.

Natural Environment and Rural Communities Act (NERC)
Designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised arrangements for delivering Government policy.

Operating Authorities
Any body, including the Environment Agency, Internal Drainage Board, County Council and Local Authority, who have powers to make or maintain works for the drainage of land.

Ordinary Watercourses
Any watercourse that does not form part of a main river.

Permeability
A measure of the ease with which a fluid can flow through a porous medium. It depends on the physical properties of the medium, for example grain size, porosity and poor shape.

Permeable pavement
A paved surface that allows the passage of water through voids between the paving blocks/slabs.

Permeable surface
A surface formed of material that is itself impervious to water but, by virtue of voids formed through the surface, allows infiltration of water to the sub-base through the pattern of voids, e.g. concrete block permeable paving.

Pervious surface
A surface that allows inflow of rainwater into the underlying construction or soil.

Piped system
Conduits generally located below ground to conduct water to a suitable location for treatment and/or disposal.

Pluvial Flooding
Flooding that result from rainfall generated overland flow before the runoff enters any watercourse or sewer. It is usually associated with high intensity rainfall events. Also referred to as surface water flooding.

Pollution
A change in the physical, chemical, radiological or biological quality of a resource (air, water or land) caused by man or man‘s activities that is injurious to existing, intended or potential uses of the resource.

Pond
Permanently wet basin designed to retain storm water and permit settlement of suspended solids and biological removal of pollutants.

Porous paving
A permeable surface allowing the passage of water through voids within, rather than between, the paving blocks / slabs.

Porous surface
A surface that infiltrates water to the sub-base across the entire surface of the material forming the surface. E.g. grass and gravel surfaces, porous concrete and porous asphalt.

Prevention
Site design and management to stop or reduce the occurrence of pollution and to reduce the volume of runoff by reducing impermeable areas.

Probability Event
The statistical probability of a flooding episode (event) occurring.

Public sewer
A sewer that is vested in and maintained by a sewerage undertaker.

Rainwater harvesting or rainwater use system
A system that collects rainwater from where it falls rather than allowing it to drain away. It includes water that is collected within the boundaries of a property, from roofs and surrounding surfaces.

Residual Risk
The Risk that remains after risk management and mitigation measures have been implemented.

Retention pond
A pond where runoff is detained (e.g. for several days) to allow settlement and biological treatment of some pollutants.

Riparian Ownership
Riparian ownership or riparian rights relates to a legal principle where all landowners whose property adjoins a body of water, have a duty and a right to maintain and make reasonable use of it as it flows through or over their property. These rights cannot be sold or transferred other than with the adjoining land and only in reasonable quantities. Riparian rights/ownership usually relates to land up to the centre of the watercourse where it is located along a land boundary.

Riparian Duties
Duties arising from riparian ownership include the duty to pass on the flow of water without obstruction, pollution or diversion affecting the rights of others. To maintain the bed and banks of the watercourse and to clear any debris, whether natural or man-made, to keep any culverts, rubbish screens, weirs and mill gates clear of debris. To be responsible for protection of your land from flooding, and to not cause any obstructions.

Run-off
Water flow over the ground surface to the drainage system. This occurs if the ground is impermeable, is saturated or if rainfall is particularly intense.

Section 38 Agreement
An agreement entered into pursuant to Section 38 Highways Act 1980 whereby a way that has been constructed or that is to be constructed becomes a highway maintainable at the public expense. A publicly maintainable highway may include provision for drainage of the highway. (Drainage of highways is defined in Section 100 (9) of the Highways Act 1980).

Section 106 (Town and Country Planning Act 1990)
A section within the Town and Country Planning Act 1990 that allows a planning obligation to a local planning authority to be legally binding.

Section 106 (Water Industry Act 1991)
A key section of the Water Industry Act 1991, relating to the right of connection to a public sewer.

Separate Sewer
A sewer for surface water or foul sewage, but not a combination of both.

Sewer
A pipe or channel taking domestic foul and/or surface water from buildings and associated paths and hard standings from two or more curtilages and having a proper outfall.

Sewerage undertaker
This is a collective term relating to the statutory undertaking of water companies that are responsible for sewerage and sewage disposal including surface water from roofs and yards of premises.

Sewers for Adoption
A guide agreed between sewerage undertakers and developers (through the House Builders Federation) specifying the standards to which private sewers need to be constructed to facilitate adoption.

Sequential Test
The NPPF advocates that planners use a sequential test when considering land allocations for development to avoid flood risk where possible. The Sequential Test aims to steer development to Flood Zone 1, which is an area at low risk of flooding. Where it is not possible to locate development in such locations sites in Flood Zone 2 will be considered. Only where it is not possible to locate development within Flood Zones 1 and 2 will development in Flood Zone 3 be considered.

Site and regional controls
Manage runoff drained from several sub-catchments. The controls deal with runoff on a catchment scale rather than at source.

Soakaway
A subsurface structure into which surface water is allowed to infiltrate into the ground.

Stormwater
Rainwater that runs off impervious surfaces and into storm drains rather than being absorbed into the soil.

Sub-catchment
A division of a catchment, allowing runoff management as near to the source possible.

Subsidiarity
The principle that an issue should be managed as close as is reasonable to its source.

SUDS (Sustainable Drainage Systems)
A sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques. Surface water management - The management of runoff in stages as it drains from a site.

Swale
A shallow vegetated channel designed to conduct and retain water, but may also permit infiltration; the vegetation filters particulate matter.

Treatment
Improving the quality of water by physical, chemical and/or biological means.

Water Act 2003
Introduced some changes to the regulation of the water industry in England and Wales under the Water Industry Act 1991, by transferring responsibility for economic regulation from an individual Director General to an Authority (Ofwat).

Water Authority
Public, private or combined entity responsible for the provision of drinking water and sewerage service.

Water Butt
A container designed to capture rainwater for its reuse.

Watercourse
A term including all rivers, streams ditches drains cuts culverts dykes sluices and passages through which water flows.

Water Management Statement
A report outlining the water cycle issues relevant to a development proposal and the suitable means of providing for drainage in the long term.

Wetland
An area that has a high proportion of emergent vegetation in relation to open water.

APPENDIX II - PRINCIPALS OF THE SURFACE WATER MANAGEMENT TRAIN

The surface water management train (sometimes called the treatment train) is fundamental to designing a successful SUDs scheme and provides a hierarchy of drainage techniques for improving quality and quantity. If water cannot be dealt with at one level in the management train, it should be taken; preferably using SUDs techniques, down the hierarchy and techniques closer to source are preferable to those lower down the hierarchy. Therefore prevention and source control should always be considered before site or regional control and discharging runoff to surface water sewers should only be a last resort, when no other option is available.

Prevention

Prevention seeks to prevent or minimise runoff and pollution; effectively to stop water entering the drainage system. It is applied on individual sites and involves good design. Prevention also involves good site housekeeping measures that will prevent pollutants entering the drainage system:

1. Keeping impervious areas to a minimum would maximise the amount of water that soaks into the ground.
2. Collecting rainwater for re-use.
3. A tidy yard with bunds around chemical storage areas will reduce spillage and leakage into the drainage system.
4. Minimising use of fertilisers, herbicides and fungicides on landscaped areas will reduce runoff of chemicals

Any excess surface runoff that can't be prevented from entering the drainage system is dealt with by the next level down so is subject to source control.

Source Control (control of runoff at or near its source)

Source control forms the start of the surface water management train and should be considered at the outset of development proposals. Source control (best management practice) is the preferred choice in any surface water drainage scheme. Controlling water at or near its source will usually be achieved by relatively small-scale techniques with each technique serving a small catchment area. Source control techniques can include the following:

1. Minimising paved areas - allowing surface water run off to drain naturally, through areas such as gardens, and public open space.
2. Use of porous surfaces where possible.
3. Rainwater recycling/harvesting - capturing rainwater from the roofs of buildings. The capture of rainwater can be used for indoor needs such as flushing toilets, filtered and purified for use within the main water system, stored via water butts for use as grey water for activities such as car washing and general irrigation of gardens.

Good housekeeping and education is essential to minimising pollution associated with surface water run off. Simple measures include, keeping paved areas clean and free of litter and waste, and informing and educating occupants about how the site is drained.

Any water not controlled at source should be subject to the next level down, i.e. site control.

Site Control (the management of water from several sources)

Site controls are used where adequate control of quantity or quality cannot be achieved with source controls alone after exhausting potential to manage surface water run off through preventative measures. This next level of the management train should be designed with the objective of minimising the quantity of water discharged directly to a river and can include the following:

1. Rainwater recycling.

2. Permeable surfaces and filter drains - permeable surfaces offer alternatives to conventional hard surfaces. Use of materials such as porous paving, gravel, and grass allows water to permeate through the surface, rather than draining off it.

3. Infiltration devices - work by enhancing the natural capacity of the ground to store and drain water. Devices may be in the form of surface features such as swales and filter strips. Generally these are small-scale systems, which are designed to fit into landscaped areas, consisting of vegetated sections of land and grassed depressions, which mimic natural drainage patterns, controlling discharge to a pond or wetland, or other discharge system. These systems assist in removing excess solids and pollutants before final discharge.

4. Devices may also be in the form of below ground features, such as soakaways and trenches. These features create underground reservoirs, which allow surface water to infiltrate gradually into the subsoil, or discharge to another structure at a controlled rate.

5. Grass swales – grassed areas adjacent to roads and pavements with a very shallow depression, allowing water to infiltrate.

Where adequate control of quantity or quality cannot be achieved at site level, flows should be conveyed to regional controls.

Regional Control (the management of runoff from several sites)

Where surface water cannot be accommodated on site, techniques should be considered which drain water away to a point where it can be returned to the natural water cycle. Regional control of surface water runoff from a site lies at the bottom of the surface water management train and is similar to site control, except the overall catchment area will be greater. It deals with water from several sites and involves the same control techniques although they should not be used on their own without source control provided at the level of individual developments. These systems can contribute to the flow and quality of run off and should be considered as water amenity features that provide habitat and encourage biodiversity. Regional control systems can include:

1. filter drains
2. swales, and
3. infiltration devices

APPENDIX III - CASE STUDIES FROM OTHER AREAS

The following two examples are of development ideas that integrate flood risk management into the development master plan. These measures may not be appropriate in all locations. Further details of each development, including costing can be found in the LifE Project – Long-term Initiatives for Flood-risk Environments publication EP98.

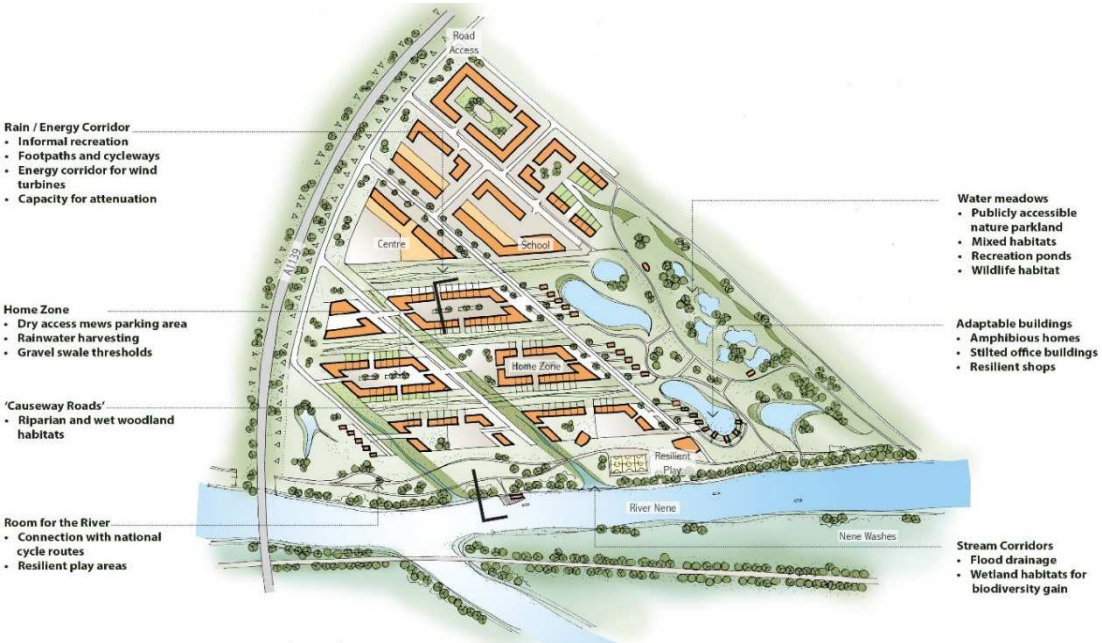
Site 1 > The River Wandle at Hackbridge

Hackbridge is located in the London Borough of Sutton on the upper catchment of the River Wandle. Flood risk is predominantly from the river, which is flashy and responsive to intense rainfall. Climate change could result in longer or more intense rainstorms increasing flash floods from overland run off, sewers and the river. Flood Zone 3 is expected to extend from the river's edge further into the site. A central amenity space, termed the village blue/green, could bring multiple benefits to this suburb, such as space for recreation, flood storage and a focal point to the local area. Higher density development is located in Flood Zone 1. Mixed residential blocks would look onto communal 'rain gardens' as part of a sustainable drainage system (SuDS). Each garden would provide multiple uses, high quality planting treating surface run off and providing a buffer to a toddlers' play area at the centre, this would be raised above a communal rain-water harvesting system A planted gulley would carry water from the river into the 'village blue' at times of flood. This landscaped hollow is designed to regularly accommodate floodwater, which would slow the flow downstream, and replenish a mix of dry and wetland habitats, providing both high amenity and biodiversity value. 'Space for Water' would be provided through regrading of the riverbank, creating a low-lying flood shelf with soft banks for a range of habitats; the 'village green' would provide a flexible informal recreation area with vegetated banks and areas of hard landscaping. The green would also provide future flood storage potential.

Courtyard rain gardens would slow the passage of rain overland, storing it until the storm has passed

Site 2 > The River Nene at Peterborough

Peterborough is located on the middle catchment of the River Nene. Flood risk is predominantly from the river. Floodwater volumes are large and floodwater could remain on site for several days. Climate change could result in the flood levels and duration of flooding increasing. Development ideas aim to reunite the city with the river. A mixture of brownfield sites and a landfill site were considered for redevelopment as part of a holistic vision. Higher density development was located close to the city centre and within Flood Zone 1 (low risk). Potential development was organised around a combination of views of Peterborough Cathedral, connections to 'Central Park', and 'stream corridor' drainage paths in times of flood. An adaptable development plan was formed for the Fengate site. The majority of the site was found to be above the 1 in 100 year flood level, having been elevated by the landfill. Climate change could result in this changing and the area becoming at risk from more frequent events. Level variations on site would allow drainage and flood paths to be created away from homes. These were envisaged as high quality, wide and attractive green corridors for public gardens and play areas. Deeper excavations could provide permanent water bodies creating various wildlife habitats and recreation opportunities. Car parking was located on higher levels of the site.A SUDS system, above the flood level, would include green roofs, permeable parking spaces and gravel swales to slow rainwater run-off.



APPENDIX IV - EXAMPLES OF WATER CONSERVATION METHODS

Water saving tap devices

Tap Aerators with integrated flow regulators reduce the flow rate by 50 % and more.
Tap Restrictor Valves reduce flow rates and pressure.

Water saving shower devices

Shower timer devices - restrict the amount of time the shower is left running.
Low flow showers - low flow shower-heads help reduce water waste by restricting the flow of water leaving your shower head.
Shower Start converter - connects to existing showerheads and automatically pauses a running shower once it gets warm.
Aerating Showers – to reduce flow rates.

Water saving WC's and Urinals

Urinal Controls - minimise water consumption within the washroom, whilst maintaining desirable levels of hygiene required for everyday public use.
Waterless Toilets - waterless composting toilets treat the waste without needing water and are ideal where water supply is limited or where waste-water disposal is difficult.
Dual Flush Toilets and Water Saving Siphons - the water saving dual flush valve can replace an old fashioned siphon. Water saving siphon are also effective in reducing water wastage.
Reduced Flush tools - displacement devices, e.g. save-a-flush bags, toilet float booster, toilet tank-bank and water _hippo'
Low flush Toilets - use at least 20 per cent less water than a standard WC.

Rain Catchment

Rain Catchment Systems - collects rainwater from a roof, paved area or runoff. The water is then filtered and stored in an above or below ground tank and can be used for either residential, commercial or landscape use.

Greywater Recycling Systems

Greywater recycling - the first step in installing a grey water recycling system is to separate the grey water (shower/bath/basin and laundry) from black water (toilet and kitchen). Various types are available including:

The **standard system** allows Greywater dispersal and reuse from the complete household. This system uses trench systems and subsurface irrigation. A typical trench for this system is about 400 mm deep and 300 mm wide filled with stone and capped with a layer of sand. The Greywater is initially passed into a settling (sedimentation) tank. This enables larger particles to settle at the bottom of the tank, thus preventing blockages.

The **Water save Trench System** is used for partial Greywater reuse situations and permits wastewater from limited sources, such as from the washing machine and / or bathroom to

be re-diverted into a settling tank (or through a filter) and then into a subsurface drain system, to be re-directed onto garden areas. This system also uses trench systems and subsurface irrigation.

The **Water save Dripper system** comprises four parts. Initially, Greywater is diverted from the normal waste stream, then it passes through either a sedimentation tank or filter, into a pump chamber, and finally the wastewater is dispersed throughout an interconnecting subsurface dripper system.

Shropshire, Herefordshire, Worcestershire & Gloucestershire Area – 'Planning – FRA Guidance note 2' - For Minor Development (See Sub-section 17 within the Flood Risk and Coastal Change Section of the Government's National Planning Practice Guidance - NPPG), Domestic & Commercial/Industrial extensions (less than 250m^2 & curtilage development) within Flood Zone 3 & Flood Zone 2 (which includes historic flooding data).

The following is advice for the benefit of landowner/occupier & the Environment:

Note: We do not recommend individual FRA consultants but the following website may help you to source a suitably qualified person http://www.endsdirectory.com/

FRA requirements: The NPPG contains a useful checklist for FRAs at sub-section 26 of the Flood Risk and Coastal Change Section. It is suggested that applications be accompanied by a simple Flood Risk Assessment (FRA) which confirms in writing that as a minimum:

EITHER
(1) Floor levels within the proposed development will be set no lower than existing levels AND,

(2) Flood proofing of the proposed development has been considered by the applicant and incorporated where appropriate to 1% (1 in 100 chance each year) river flood level or 0.5% (1 in 200 chance) tidal and coastal level, including climate change allowance.

OR **preferably** that:

(3) Floor levels within the extension will be set 600mm above the known or modelled 1% river flood level or 0.5% tidal & coastal flood level (including climate change allowance). This should be demonstrated by a plan to Ordnance Datum/GPS showing finished floor levels relative to the known or modelled flood level.

NOTES:

* The NPPG refers to Environment Agency guidance on considering **climate change** in planning decisions which is available online: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances (new allowances were published on 19 February 2016).

Please refer to our separate 'Area Climate Change Guidance' (March 2016) for more information on how to consider and incorporate allowances in development proposals. This advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to river basin district catchment.

The table below is for **'peak river flows'** within the Severn River Basin district, and specifies the range of allowances to reflect individual development's lifetime and vulnerability. For example residential would be 100 years (so 2070-2115).

Severn Peak River Flows: Total potential change anticipated	2015-39	2040-2069	2070-2115
Upper end	25%	40%	70%
Higher central	15%	25%	35%
Central	10%	20%	25%

For non-major development, in the absence of modelled information it may be reasonable to utilise a nominal climate change allowance i.e. an alternative appropriate figure. To assist applicants and LPA's we have provided some 'nominal' climate change allowances within our area climate change guidance. These nominal allowances should be considered as appropriate within any FRA.

- For '**more vulnerable'** development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.

– For **'water compatible' or 'less vulnerable'** development e.g. commercial, the FRA should use the 'central' climate change allowance (20%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'higher central' allowance (25%) where feasible.

Background: For proposed extensions within Flood Zone 3/2, the main aspect of flood risk to consider is that the development itself may be at risk of flooding. The most effective means of addressing this risk is through submission of a simple FRA. This should identify the flood risks and set out the proposed measures to mitigate that risk. For most developments within Flood Zone 3/2, submission of a site plan showing floor levels related to Ordnance Datum/GPS should confirm that the site is above flood level. Where such a plan indicates otherwise or is not provided, mitigation measures would focus on controlling floor levels and incorporating flood proofing into the design of the extension.

Floor levels: From a flood risk view point, the ideal mitigation in terms of floor levels is to ensure that these are set to above the known or modelled 1% river flood level or 0.5% tidal and coastal flood level at that location. However, in the case of an extension it will often not be practical to raise floor levels given the potential effects on other issues such as access (including that for disabled users), usability and visual amenity. It is advisable that any proposal to raise floor levels should be discussed and agreed with the Local Planning Authority at the earliest possible stage.

'Flood proofing': The Environment Agency recommends that in areas at risk of flooding, consideration be given to the incorporation into the design and construction of the development of 'flood proofing' measures. These include removable barriers on building apertures such as doors and air bricks and providing electrical services into the building at a high level so that plugs are located above possible flood levels. Such measures could also be considered to protect existing property.

Details of flood resilience and resistance techniques can be found in 'Improving the Flood Performance of New Buildings - Flood Resilient Construction' (DCLG 2007). http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

Residual risks: It should be noted that if the existing building is in a 'low spot' the measures adopted above in terms of maintaining floor levels at existing levels and flood proofing will not necessarily eliminate risks during a flood event. Applicants should be asked to check ground levels if in doubt about this. Even where it is possible to ensure floor levels are set above the known or modelled 1% river and 0.5% tidal and coastal flood level, *flood risks will remain for an event that exceeds this magnitude.*

FURTHER INFORMATION:

Flood level data to assist the FRA and Flood Management Plan (where available) may be obtained from our Area Customers & Engagement team on telephone 03708 506506; shwgenquiries@environment-agency.gov.uk

Flood Risk Permit (Flood Defence Consents until 6 April 2016)
Works (including temporary) in, on or adjacent to a Main River/ Flood structure or Main river Floodplain may need a permit. See https://www.gov.uk/guidance/flood-risk-activities-environmental-permits For advice please phone 03708 506506 and ask for the Partnerships and Strategic Overview Team that covers your area.

Note: Development which involves a culvert or an obstruction to flow on an Ordinary Watercourse will require consent under the Land Drainage Act 1991 and the Flood and Water Management Act 2010. In the case of an Ordinary Watercourse the responsibility for Consenting lies with the Lead Local Flood Authority (LLFA). In an internal drainage district, the consent of the Internal Drainage Board, instead of the LLFA, is required for the above works under Section 23 of the Land Drainage Act 1991. An Ordinary Watercourse is defined as any watercourse not identified as a Main River on maps held by the Environment Agency and DEFRA. For further information on Ordinary Watercourses contact the LLFA.

As of November 2012 (Flood Map update) in Shropshire, Herefordshire, Worcestershire & Gloucestershire Area, the Flood Zone 2 outline includes historical flooding data.

Shropshire, Herefordshire, Worcestershire & Gloucestershire Area – 'Planning – FRA Guidance note 3' - For all development within Flood Zone 2 and 3 (excluding minor development – see definition of minor development at Sub-section 17 within the Flood Risk and Coastal Change Section of the Government's National Planning Practice Guidance - NPPG)

The following is advice to assist in the production of a Flood Risk Assessment (FRA).

Note: We do not recommend individual FRA consultants but the following website may help you to source a suitably qualified person http://www.endsdirectory.com/

FRA requirements: Planning applications must be accompanied by a FRA that is submitted to the Local Planning Authority (LPA). The NPPG contains a useful checklist for FRAs at sub-section 26 of the Flood Risk and Coastal Change Section. To be acceptable as a FRA the applicant should confirm as a minimum:

1. A level survey to Ordnance Datum/GPS showing the known or modelled 1% (1 in 100 chance each year) river flood level, including **climate change*,** or where relevant 0.5% (1 in 200 chance each year) tidal & coastal flood level relative to proposed site levels. For sites in Flood Zone 3, this should include the 5% (1 in 20 year) flood event, or equivalent.

2. An assessment of the risks posed to the site including that based on 1% modelled flooding (including climate change*), any documented historic flooding and risks associated with surface water runoff from the site (including climate change).

3. Flood Risk to the development and users - Proposed mitigation measures to control those risks for the lifetime of the development, based on a 1% event, including climate change, e.g. setting appropriate floor levels**, providing 'flood proofing'; safe access & egress*** for occupiers (especially important where 'more vulnerable'[1] users or overnight accommodation);

4. Impact on flood risk elsewhere – The NPPG indicates that developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area (flood risk betterment). Issues to consider include providing 'level for level, volume for volume' flood storage compensation, reducing impact on storage and flow routes through the layout, form and design of the building/structure; providing surface water disposal****.

5. Residual risks after mitigation, including risk during an extreme 0.1% (1 in 1000 year) event.

NOTES:

* The NPPG refers to Environment Agency guidance on considering **climate change** in planning decisions which is available online: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances (new allowances were published on 19 February 2016).

Please refer to our separate 'Area Climate Change Guidance' (March 2016) for more information on how to consider and incorporate allowances in development proposals. This advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to river basin district catchment.

The table below is for **'peak river flows'** within the Severn River Basin district, and specifies the range of allowances to reflect individual development's lifetime and vulnerability. For example residential would be 100 years (so 2070-2115).

Severn Peak River Flows: Total potential change anticipated	2015-39	2040-2069	2070-2115
Upper end	25%	40%	70%
Higher central	15%	25%	35%
Central	10%	20%	25%

For 'major development' (as defined within The Town and Country Planning Development Management Procedure (England) Order 2015), we would expect a detailed FRA to provide an appropriate assessment (hydraulic model) of the relevant climate change ranges.

For non-major development, in the absence of modelled information it may be reasonable to utilise a nominal climate change allowance i.e. an alternative appropriate figure. To assist applicants and LPA's we have provided some 'nominal' climate change allowances within our area climate change guidance. These nominal allowances should be considered as appropriate within any FRA.

The design flood (1% with climate change) should be used to inform the sequential test including appropriate location of built development and ensure 'safe' development.

- For '**more vulnerable'** development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.

- Development classed as **'Essential Infrastructure'** (as defined within Table 2 - Flood Risk Vulnerability Classification, Paragraph: 066 Reference ID: 7-066-20140306 of the NPPG) should be designed to the 'upper end' climate change allowance (70%).

** It is advised that **Finished Floor Levels** should be set no lower than 600mm above the 1% river flood level plus climate change with flood proofing techniques considered (where

appropriate). For more information on resistance and resilience techniques see: http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

– For **'water compatible'** or **'less vulnerable'** development e.g. commercial, the FRA should use the 'central' climate change allowance (20%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'higher central' allowance (25%) where feasible.

Some 'water compatible' and 'less vulnerable' development such as agricultural developments/structures, or stables etc, by their nature may be floodable and therefore the raising of floor levels may not be feasible/practicable. In these cases, we would suggest that any storage in these buildings, including any flood susceptible electrics, or items that may be damaged should be sited above possible flood levels, in order to prevent flood risk and associated pollution.

*** For '**more vulnerable' and 'highly vulnerable'** development, where overnight accommodation is proposed, the FRA should demonstrate that the development has **safe, pedestrian access** above the 1% river flood level plus climate change*. Pedestrian access should preferably remain flood free in a 1% river flood event plus climate change. However, in cases where this may not be achievable, the FRA may demonstrate that pedestrian access is acceptable based on an appropriate assessment of 'hazard risk' including water depth, velocity and distance to higher ground (above the 1% river flood level plus climate change). Reference should be made to DEFRA Hazard risk (FD2320) – 'Danger to People for Combinations of Depth & Velocity' (see Table 13.1 – DEFRA/EA Flood Risk Assessment Guidance for New Development FD2320 at: http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/FD2320_3364_TRP_pdf.sflb.ashx

Given our role and responsibilities we would not make comment on the safety of the access or object on this basis. This does not mean we consider that the access is safe or the proposals acceptable in this regard. We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider this to be safe in accordance with the guiding principles of the NPPG.

Furthermore access and egress by vehicular means is also a matter for your Emergency Planners and the Emergency Services.

A Flood Evacuation Management Plan may also be appropriate, see note below.

- Applications involving intensification of use, for example conversion of buildings to provide additional residential units, should consider safe access as a risk. It may be possible to reduce the risk of flooding to an existing access through minor modifications to ground levels or alternative provision.

- For '**less vulnerable'** development (especially those uses where there are people occupying the building and/or vehicles are present, e.g. office, retail) the FRA should consider **safe access** above the 1% river flood level plus climate change. However, given the nature of this type of proposal we would advise that this is considered as a less critical risk i.e. future occupants may not be able to access the proposed development (building and/or any car park) in design flood events. On this basis, this risk could be managed by

implementation of a flood evacuation plan (see below) in consultation with your Emergency Planners.

Flood Evacuation Management Plan: The NPPG (paragraph 056) states that one of the considerations for safe occupation is whether adequate 'flood warning' would be available to people using the development.

Flood Warning: For your consideration, where no Flood Warning service is in place we would be unable to offer any notification of potential danger from rising levels.

Where the Flood Warning service consists of a Flood Alert, whilst this gives a level of flood awareness, it will not provide a detailed local warning to comprehensively inform evacuation.

Where a comprehensive Flood Warning service operates, a trigger level may be sought to assist in evacuation.

For information on developing a Flood Evacuation Management Plan see sub-section 22 of the Flood Risk and Coastal Change Section of the NPPG and our guidance online at: https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider the FEMP secures safe and sustainable development.

**** For surface water management advice, please contact your Lead Local Flood Authority (LLFA).

Background: Need for a FRA

There are three main flood risk considerations –

- The flood risk to the site, and any occupiers, resulting from a 1% event and an extreme flood event (i.e. a flood with between a 0.1% and 1% chance each year from rivers or between 0.1% and 0.5% chance each year from the sea) – **including climate change**.
- The flood risk resulting from the change of use of greenfield land to developed land which will reduce the natural drainage permeability of that land leading to increased flood risk elsewhere.
- The risk to occupiers and /or others of surface water flooding due to increased run-off. Even at outline stage the applicant needs to be able to demonstrate that surface water balancing can be achieved to a 1% (plus climate change) standard. All sites should aim to provide flood risk reduction/betterment.

The FRA should use available historic information, surveys and local knowledge to establish what the impact of flooding would have been based on previous events. This can then be used to establish any mitigation measures necessary to protect the development from future events.

It is possible that flooding may occur from a source other than that identified by the Agency's 'indicative' Flood Zones, which may occur due to local sewer or other drainage constraints, groundwater and surface water run off problems in the area. These may be

identified within Strategic Flood Risk Assessment for the relevant local authority. The FRA will need to investigate the cause and effect of such local flooding as well as identifying appropriate mitigation/flood risk reduction.

INFORMATION:

Other flood risk issues to consider for development in Flood Zones 1 or 2 - Dry Islands

There are some areas within Flood Zones 1 or 2 that are surrounded by areas at a higher risk of flooding i.e. areas falling within Flood Zones 3. In certain cases development upon such 'dry islands' can present particular hazards to public safety and risks such as those associated with maintaining safe access and exit for occupants during flood events. The distribution of dry islands and risks posed by them in terms of access/exit vary considerably across the country. (If there is a concern on this issue, contact the local Environment Agency Sustainable Places Team).

FURTHER INFORMATION:

Flood level data to assist the FRA and Flood Management Plan (where available) may be obtained from our Area Customers & Engagement team on telephone 03708 506506; shwgenquiries@environment-agency.gov.uk

Flood Risk Permit (Flood Defence Consents until 6 April 2016)
Works (including temporary) in, on or adjacent to a Main River/ Flood structure or Main river Floodplain may need a permit. See https://www.gov.uk/guidance/flood-risk-activities-environmental-permits For advice please phone 03708 506506 and ask for the Partnerships and Strategic Overview Team that covers your area.

(Note: Flood Defence Consents still apply to Ordinary watercourses – Contact your LLFA).

As of November 2012 (Flood Map update) in Shropshire, Herefordshire, Worcestershire & Gloucestershire Area, the Flood Zone 2 outline includes historical flooding data.

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1 Flood risk 'Vulnerability' classification of development - see Table 2 at sub-section 25 of the Flood Risk and Coastal Change section of the NPPG.

Environment Agency

Environment Agency Standing Advice to Local Planning Authorities on Development and Flood Risk

Minor Development (Sub-section 17 within the Flood Risk and Coastal Change Section of the NPPG), Domestic & Commercial/Industrial extensions (less than 250m^2 & curtilage development) within Flood Zone 3 & Flood Zone 2 (and historic)

Process: Formal EA response is 'NO COMMENT'

The following is advice for the benefit of landowner/occupier and the environment:

FRA requirements: The NPPG contains a useful checklist for FRAs at sub-section 26 of the Flood Risk and Coastal Change Section. It is suggested that applications be accompanied by a simple Flood Risk Assessment (FRA) which confirms in writing that as a minimum:

EITHER
(1) Floor levels within the proposed development will be set no lower than existing levels AND,

(2) Flood proofing of the proposed development has been considered by the applicant and incorporated where appropriate to 1% (1 in 100 chance each year) river flood level or 0.5% (1 in 200 chance) tidal and coastal level, including climate change allowance.

OR **preferably** that:

(3) Floor levels within the extension will be set 600mm above the known or modelled 1% (1 in 100 chance each year) river flood level or 0.5% (1 in 200 chance each year) tidal & coastal flood level (including climate change allowance). This should be demonstrated by a plan to Ordnance Datum/GPS showing finished floor levels relative to the known or modelled flood level.

Background: For proposed extensions within Flood Zone 3/2, the main aspect of flood risk to consider is that the development itself may be at risk of flooding. The most effective means of addressing this risk is through submission of a simple FRA. This should identify the flood risks and set out the proposed measures to mitigate that risk. For most developments within Flood Zone 3/2, submission of a site plan showing floor levels related to Ordnance Datum/GPS should confirm that the site is above flood level. Where such a plan indicates otherwise or is not provided, mitigation measures would focus on controlling floor levels and incorporating flood proofing into the design of the extension.

Floor levels: From a flood risk view point, the ideal mitigation in terms of floor levels is to ensure that these are set to above the known or modelled 1%(1 in 100 chance each year) river flood level or 0.5% (1 in 200 chance each year) tidal and coastal flood level at that location. However, in the case of an extension it will often not be practical to raise floor

levels given the potential effects on other issues such as access (including that for disabled users), usability and visual amenity.

'Flood proofing': The Environment Agency recommends that in areas at risk of flooding, consideration be given to the incorporation into the design and construction of the development of 'flood proofing' measures. These include removable barriers on building apertures such as doors and air bricks and providing electrical services into the building at a high level so that plugs are located above possible flood levels. Such measures could also be considered to protect existing property.

Additional guidance, including information on kite marked flood protection products, can be found on the Environment Agency web site at https://www.gov.uk/prepare-for-a-flood.

Details of flood resilience and resistance techniques can be found in 'Improving the Flood Performance of New Buildings - Flood Resilient Construction' (DCLG 2007). http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

Residual risks: It should be noted that if the existing building is in a 'low spot' the measures adopted above in terms of maintaining floor levels at existing levels and flood proofing will not necessarily eliminate risks during a flood event. Applicants should be asked to check ground levels if in doubt about this. Even where it is possible to ensure floor levels are set above the known or modelled 1% river and 0.5% tidal and coastal flood level, *flood risks will remain for an event that exceeds this magnitude.*

Note: Development which involves a culvert or an obstruction to flow on an Ordinary Watercourse will require consent under the Land Drainage Act 1991 and the Flood and Water Management Act 2010. In the case of an Ordinary Watercourse the responsibility for Consenting lies with the Lead Local Flood Authority (LLFA). In an internal drainage district, the consent of the Internal Drainage Board, instead of the LLFA, is required for the above works under Section 23 of the Land Drainage Act 1991. An Ordinary Watercourse is defined as any watercourse not identified as a Main River on maps held by the Environment Agency and DEFRA. For further information on Ordinary Watercourses contact the LLFA.

Flood level data to assist the FRA and Flood Management Plan (where available) may be obtained from our Area Customers & Engagement team on telephone 03708 506506; shwgenquiries@environment-agency.gov.uk

As of November 2012 (Flood Map update) in Shropshire, Herefordshire, Worcestershire & Gloucestershire Area, the Flood Zone 2 outline includes historical flooding data.

Last updated: **May 2016**
Contact: Environment Agency, Sustainable Places Team, Shropshire Herefordshire Worcestershire & Gloucestershire Area.
shwgplanning@environment-agency.gov.uk

Development in Flood Zone 2 where the flood zone is generated by an 'ordinary watercourse'[1]

Process
Formal EA response for Green Box on the local matrix = 'LPA to use the advice below'.

This advice applies to applications, in Flood Zone 2, where the proposed development footprint (including change of use) is **less than 1ha**. However, it excludes 'essential' and 'highly vulnerable'[2] developments. **These and larger scale applications would still be subject to 'Red Box' consultation.**

This advice also applies to larger scale applications (greater than 1ha) excluding 'Essential Infrastructure' and/or 'Highly Vulnerable' development; or landfill, hazardous waste sites and caravans/camping sites. **These applications would still be subject to 'Red Box' consultation.**

ADVICE NOTE: We recommend consultation with your Lead Local Flood Authority (LLFA) or Internal drainage Board (IDB) and/or Local Land Drainage section, to provide information to support the production of and review of the Flood Risk Assessment (FRA).

Fluvial risk - There may be information within your Preliminary FRA, Strategic FRA, including data on ordinary watercourses/historical flooding.

Other sources of flooding including surface water may also be relevant.

Works affecting an Ordinary Watercourse may require consent from the LLFA or your local IDB. This consenting role ceased to be a responsibility of the Environment Agency in April 2012.

Requirement for a Sequential Test: Prior to investing resources in completing a detailed FRA, it is recommended that applicants contact the Local Planning Authority (LPA) and discuss how the flood risk Sequential Test as set out in the National Planning Policy Framework (NPPF) and its accompanying National Planning Practice Guidance (NPPG) will affect the proposed development. It is possible that the development will be inappropriate and be refused planning permission irrespective of any detailed FRA.

The NPPF details the requirement for a risk-based Sequential Test (ST) in determining planning applications. See paragraphs 100–104 of the NPPF and sub-sections 4, 5 and 11 within the Flood Risk and Coastal Change Section of the NPPG.

Paragraph 101 of the NPPF requires decision-makers to steer new development to areas at the lowest probability of flooding by applying a ST. It states that 'Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding'.

Further detail is provided in the NPPG. This states that "Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test [ET] if required". (Paragraph: 019 Reference ID: 7-019-20140306). See also paragraph 102 of the NPPF and Table 3 in sub-section 25 within the Flood Risk and Coastal Change Section of the NPPG e.g. ET is required for 'more vulnerable' development in Flood Zone 3.

Based on the scale and nature of the proposal, which is considered non-major development in accordance with the Development Management Procedure Order (2010), we would not make any bespoke comments on the ST, in this instance. The fact that we are not providing comments does not mean that there are no ST issues, but we leave this for your Council to consider.

You should seek evidence that the ST has been properly applied (see notes in EA ST process guide in our National Flood Risk Standing Advice (available online at: https://www.gov.uk/government/publications/flood-risk-standing-advice-for-local-planning-authorities-frsa) and paragraph 104 and footnote 22 of the NPPF on change of use developments).

Requirement for a FRA: The NPPF (paragraph 103) requires that a planning application should be accompanied by a FRA. Where a FRA is not submitted with the application or the FRA is not accepted by the LPA the Environment Agency would recommend that the LPA either defers the application or refuses planning permission. We would support your decision at any subsequent appeal.

For 'less vulnerable' or 'more vulnerable' development, if the FRA confirms that the development is within **Flood Zone 3b** (functional floodplain, as defined in Table 1 in sub-section 25 within the Flood Risk and Coastal Change Section of the PPG) depending on the site specifics, for example the potential impact upon flows, the proposal may be inappropriate. This is in accordance with Table 3 in sub-section 25 within the Flood Risk and Coastal Change Section of the NPPG which states that such development "should not be permitted" in Zone 3b functional floodplain.

We would expect sites in Zone 3b to assess the impact on the 5% (1 in 20 year) event.

FRA Guidance

- Refer to FRA Guidance note 3.

FRA requirements: Planning applications must be accompanied by a FRA that is submitted to the Local Planning Authority (LPA). The NPPG contains a useful checklist for FRAs at sub-section 26 of the Flood Risk and Coastal Change Section. To be acceptable as a FRA the applicant should confirm as a minimum:

1. A level survey to Ordnance Datum/GPS showing the known or modelled 1% (1 in 100 chance each year) river flood level, including **climate change*,** or where relevant 0.5% (1 in 200 year) tidal & coastal flood level relative to proposed site levels. For sites in Flood Zone 3, this should include the 5% (1 in 20 year) flood event, or equivalent.

2. An assessment of the risks posed to the site including that based on 1% modelled flooding (including climate change*), any documented historic flooding and risks associated with surface water runoff from the site (including climate change).

3. Flood Risk to the development and users - Proposed mitigation measures to control those risks for the lifetime of the development, based on a 1% event, including climate change, e.g. setting appropriate floor levels**, providing 'flood proofing'; safe access & egress*** for occupiers (**essential where 'more vulnerable'[2] uses include overnight accommodation and a less critical risk for other 'more vulnerable', 'water compatible' and 'less vulnerable' uses**).

4. Impact on flood risk elsewhere – The NPPG indicates that developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area (flood risk betterment). Issues to consider include providing 'level for level, volume for volume' flood storage compensation, reducing impact on storage and flow routes through the layout, form and design of the building/structure; providing surface water disposal****.

5. Residual risks after mitigation, including risk during an extreme 0.1 % (1 in 1000 year) event.

NOTES:

* The NPPG refers to Environment Agency guidance on considering **climate change** in planning decisions which is available online: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances (new allowances were published on 19 February 2016).

Please refer to our separate 'Area Climate Change Guidance' (March 2016) for more information on how to consider and incorporate allowances in development proposals. This advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to river basin district catchment.

The table below is for **'peak river flows'** within the Severn River Basin district, and specifies the range of allowances to reflect individual development's lifetime and vulnerability. For example residential would be 100 years (so 2070-2115).

Severn Peak River Flows: Total potential change anticipated	2015-39	2040-2069	2070-2115
Upper end	25%	40%	70%
Higher central	15%	25%	35%
Central	10%	20%	25%

For 'major development' (as defined within The Town and Country Planning Development Management Procedure (England) Order 2015), we would expect a detailed FRA to provide an appropriate assessment (hydraulic model) of the relevant climate change ranges.

For non-major development, in the absence of modelled information it may be reasonable to utilise a nominal climate change allowance i.e. an alternative appropriate figure. To assist applicants and LPA's we have provided some 'nominal' climate change allowances within our area climate change guidance. These nominal allowances should be considered as appropriate within any FRA.

The design flood (1% with climate change) should be used to inform the sequential test including appropriate location of built development and ensure 'safe' development.

- For **'more vulnerable'** development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.

** It is advised that **Finished Floor Levels** should be set no lower than 600mm above the 1% river flood level plus climate change with flood proofing techniques considered (where appropriate). For more information on resistance and resilience techniques see: http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

– For **'water compatible' or 'less vulnerable'** development e.g. commercial, the FRA should use the 'central' climate change allowance (20%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'higher central' allowance (25%) where feasible.

Some 'water compatible' and 'less vulnerable' development such as agricultural developments/structures, or stables etc, by their nature may be floodable and therefore the raising of floor levels may not be feasible/practicable. In these cases, we would suggest that any storage in these buildings, including any flood susceptible electrics, or items that may be damaged should be sited above possible flood levels, in order to prevent flood risk and associated pollution.

*** For '**more vulnerable'** development, where overnight accommodation is proposed, the FRA should demonstrate that the development has **safe, pedestrian access** above the 1% river flood level plus climate change*. Pedestrian access should preferably remain flood free in a 1% river flood event plus climate change. However, in cases where this may not be achievable, the FRA may demonstrate that pedestrian access is acceptable based on an appropriate assessment of 'hazard risk' including water depth, velocity and distance to higher ground (above the 1% river flood level plus climate change). Reference should be made to DEFRA Hazard risk (FD2320) – 'Danger to People for Combinations of Depth & Velocity' (see Table 13.1 – DEFRA/EA Flood Risk Assessment Guidance for New Development FD2320 at:
http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/FD2320_3364_TRP_pdf.sflb.ashx

Given our role and responsibilities we would not make comment on the safety of the access or object on this basis. This does not mean we consider that the access is safe or the proposals acceptable in this regard. We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider this to be safe in accordance with the guiding principles of the NPPG.

Furthermore access and egress by vehicular means is also a matter for your Emergency Planners and the Emergency Services.

A Flood Evacuation Management Plan may also be appropriate, see note below.

- Applications involving intensification of use, for example conversion of buildings to provide additional residential units, should consider safe access as a risk. It may be possible to reduce the risk of flooding to an existing access through minor modifications to ground levels or alternative provision.

- For '**less vulnerable'** development (especially those uses where there are people occupying the building and/or vehicles are present, e.g. office, retail) the FRA should consider **safe access** above the 1% river flood level plus climate change. However, given the nature of this type of proposal we would advise that this is considered as a less critical risk i.e. future occupants may not be able to access the proposed development (building and/or any car park) in design flood events. On this basis, this risk could be managed by implementation of a flood evacuation plan (see below) in consultation with your Emergency Planners.

Flood Evacuation Management Plan: The NPPG (paragraph 056) states that one of the considerations for safe occupation is whether adequate 'flood warning' would be available to people using the development.

Flood Warning: For your consideration, where no Flood Warning service is in place we would be unable to offer any notification of potential danger from rising levels.

Where the Flood Warning service consists of a Flood Alert, whilst this gives a level of flood awareness, it will not provide a detailed local warning to comprehensively inform evacuation.

Where a comprehensive Flood Warning service operates, a trigger level may be sought to assist in evacuation.

For information on developing a Flood Evacuation Management Plan see sub-section 22 of the Flood Risk and Coastal Change Section of the NPPG and our guidance online at: https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider the FEMP secures safe and sustainable development.

**** For surface water management advice, please contact your Lead Local Flood Authority (LLFA).

Background: Need for a FRA

There are three main flood risk considerations –

- The flood risk to the site, and any occupiers, resulting from a 1% event and an extreme flood event (i.e. a flood with between a 0.1% and 1% chance each year from rivers or between 0.1% and 0.5% chance each year from the sea) – **including climate change**.
- The flood risk resulting from the change of use of greenfield land to developed land which will reduce the natural drainage permeability of that land leading to increased flood risk elsewhere.

- The risk to occupiers and /or others of surface water flooding due to increased run-off. Even at outline stage the applicant needs to be able to demonstrate that surface water balancing can be achieved to a 1% (plus climate change) standard. All sites should aim to provide flood risk reduction/betterment.

The FRA should use available historic information, surveys and local knowledge to establish what the impact of flooding would have been based on previous events. This can then be used to establish any mitigation measures necessary to protect the development from future events.

It is possible that flooding may occur from a source other than that identified by the Environment Agency's 'indicative' Flood Zones, which may occur due to local sewer or other drainage constraints, groundwater and surface water runoff problems in the area. These may be identified within Strategic Flood Risk Assessment for the relevant local authority. The FRA will need to investigate the cause and effect of such local flooding as well as identifying appropriate mitigation/flood risk reduction.

FURTHER INFORMATION:

Flood level data to assist the FRA and Flood Management Plan (where available) may be obtained from our Area Customers & Engagement team on telephone 03708 506506; shwgenquiries@environment-agency.gov.uk

Flood Risk Permit (Flood Defence Consents until 6 April 2016)
Works (including temporary) in, on or adjacent to a Main River/ Flood structure or Main river Floodplain may need a permit. See https://www.gov.uk/guidance/flood-risk-activities-environmental-permits For advice please phone 03708 506506 and ask for the Partnerships and Strategic Overview Team that covers your area.
(Note: Flood Defence Consents still apply to Ordinary watercourses – Contact your LLFA).

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[1] Main Rivers are indicated on our Flood Zone Maps by red lines. When determining whether to consult the EA, the LPA will need to check the Flood Zone Maps to see whether the site is affected by the floodplain of a main river (including backing up of any adjacent watercourse). You can also check the classification of the watercourse with the LLFA, some of which have produced Drainage and Flooding Interactive Maps.

[2] Flood risk 'Vulnerability' classification of development - see Table 2 at sub-section 25 of the Flood Risk and Coastal Change section of the NPPG.

Last updated: **May 2016**
Contact: Environment Agency, Sustainable Places Team, Shropshire Herefordshire Worcestershire & Gloucestershire Area.
shwgplanning@environment-agency.gov.uk

Environment Agency

Development in Flood Zone 3 where the flood zone is generated by an 'ordinary watercourse'[1]

Process
Formal EA response for Green Box on the local matrix = 'LPA to use the advice below'.

This standing advice applies to applications, in Flood Zone 3, where the provision of '**less vulnerable**' and '**water compatible**'[2] building(s) **footprint (or change of use) is less than 1000m^2** and **proposals for less than 10 dwellings/caravan or camping pitches**.

However, it excludes 'essential' and 'highly vulnerable'[2] developments; and the following 'more vulnerable'[2] development types: Hospitals, Residential Institutions (including student halls of residence) and hazardous waste management sites.
These and larger scale applications would still be subject to 'Red Box' consultation.

ADVICE NOTE: We recommend consultation with your Lead Local Flood Authority (LLFA) or Internal drainage Board (IDB) and/or Local Land Drainage section, to provide information to support the production of and review of the Flood Risk Assessment (FRA).

Fluvial risk - There may be information within your Preliminary FRA, Strategic FRA, including data on ordinary watercourses/historical flooding.

Other sources of flooding including surface water may also be relevant.

Works affecting an Ordinary Watercourse may require consent from the LLFA or your local IDB. This consenting role ceased to be a responsibility of the Environment Agency in April 2012.

Requirement for a Sequential Test: Prior to investing resources in completing a detailed FRA, it is recommended that applicants contact the Local Planning Authority (LPA) and discuss how the flood risk Sequential Test as set out in the National Planning Policy Framework (NPPF) and its accompanying Planning Practice Guidance (NPPG) will affect the proposed development. It is possible that the development will be inappropriate and be refused planning permission irrespective of any detailed FRA.

The NPPF details the requirement for a risk-based Sequential Test (ST) in determining planning applications. See paragraphs 100–104 of the NPPF and sub-sections 4, 5 and 11 within the Flood Risk and Coastal Change Section of the NPPG.

Paragraph 101 of the NPPF requires decision-makers to steer new development to areas at the lowest probability of flooding by applying a ST. It states that "Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding".

Further detail is provided in the NPPG. This states that "Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into

account the flood risk vulnerability of land uses and applying the Exception Test [ET] if required". (Paragraph: 019 Reference ID: 7-019-20140306). See also paragraph 102 of the NPPF and Table 3 in sub-section 25 within the Flood Risk and Coastal Change Section of the NPPG e.g. ET is required for 'more vulnerable' development in Flood Zone 3.

Based on the scale and nature of the proposal, which is considered non-major development in accordance with the Development Management Procedure Order (2010), we would not make any bespoke comments on the ST, in this instance. The fact that we are not providing comments does not mean that there are no ST issues, but we leave this for your Council to consider.

You should seek evidence that the ST has been properly applied (see notes in EA ST process guide in our National Flood Risk Standing Advice (available online at: https://www.gov.uk/government/publications/flood-risk-standing-advice-for-local-planning-authorities-frsa) and paragraph 104 and footnote 22 of the NPPF on change of use developments).

Requirement for a FRA: The NPPF (paragraph 103) requires that a planning application should be accompanied by a FRA. Where a FRA is not submitted with the application or the FRA is not accepted by the LPA the Environment Agency would recommend that the LPA either defers the application or refuses planning permission. We would support your decision at any subsequent appeal.

For 'highly vulnerable', 'more vulnerable', or 'less vulnerable' development, if the FRA confirms that the development is within **Flood Zone 3b** (functional floodplain, as defined in Table 1 in sub-section 25 within the Flood Risk and Coastal Change Section of the PPG) depending on the site specifics, for example the potential impact upon flows, the proposal may be inappropriate. This is in accordance with Table 3 in sub-section 25 within the Flood Risk and Coastal Change Section of the NPPG which states that such development "should not be permitted" in Zone 3b functional floodplain.

We would expect sites in Zone 3b to assess the impact on the 5% (1 in 20 year) event.

FRA Guidance

- Refer to FRA Guidance note 3.

FRA requirements: Planning applications must be accompanied by a FRA that is submitted to the Local Planning Authority (LPA). The NPPG contains a useful checklist for FRAs at sub-section 26 of the Flood Risk and Coastal Change Section. To be acceptable as a FRA the applicant should confirm as a minimum:

1. A level survey to Ordnance Datum/GPS showing the known or modelled 1% (1 in 100 chance each year) river flood level, including **climate change*,** or where relevant 0.5% (1 in 200 year) tidal & coastal flood level relative to proposed site levels. For sites in Flood Zone 3, this should include the 5% (1 in 20 year) flood event, or equivalent.

2. An assessment of the risks posed to the site including that based on 1% modelled flooding (including climate change*), any documented historic flooding and risks associated with surface water runoff from the site (including climate change).

3. Flood Risk to the development and users - Proposed mitigation measures to control those risks for the lifetime of the development, based on a 1% event, including climate change, e.g. setting appropriate floor levels**, providing 'flood proofing'; safe access & egress*** for occupiers (**essential where 'more vulnerable'[2] uses include overnight accommodation and a less critical risk for other 'more vulnerable', 'water compatible' and 'less vulnerable' uses**).

4. Impact on flood risk elsewhere – The NPPG indicates that developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area (flood risk betterment). Issues to consider include providing 'level for level, volume for volume' flood storage compensation, reducing impact on storage and flow routes through the layout, form and design of the building/structure; providing surface water disposal****.

5. Residual risks after mitigation, including risk during an extreme 0.1% (1 in 1000 year) event.

NOTES:

* The NPPG refers to Environment Agency guidance on considering **climate change** in planning decisions which is available online: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances (new allowances were published on 19 February 2016).

Please refer to our separate 'Area Climate Change Guidance' (March 2016) for more information on how to consider and incorporate allowances in development proposals. This advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to river basin district catchment.

The table below is for **'peak river flows'** within the Severn River Basin district, and specifies the range of allowances to reflect individual development's lifetime and vulnerability. For example residential would be 100 years (so 2070-2115).

Severn Peak River Flows: Total potential change anticipated	2015-39	2040-2069	2070-2115
Upper end	25%	40%	70%
Higher central	15%	25%	35%
Central	10%	20%	25%

For 'major development' (as defined within The Town and Country Planning Development Management Procedure (England) Order 2015), we would expect a detailed FRA to provide an appropriate assessment (hydraulic model) of the relevant climate change ranges.

For non-major development, in the absence of modelled information it may be reasonable to utilise a nominal climate change allowance i.e. an alternative appropriate figure. To assist applicants and LPA's we have provided some 'nominal' climate change allowances within our area climate change guidance. These nominal allowances should be considered as appropriate within any FRA.

The design flood (1% with climate change) should be used to inform the sequential test including appropriate location of built development and ensure 'safe' development.

- For **'more vulnerable'** development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.

** It is advised that **Finished Floor Levels** should be set no lower than 600mm above the 1% river flood level plus climate change with flood proofing techniques considered (where appropriate). For more information on resistance and resilience techniques see: http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf

– For **'water compatible' or 'less vulnerable'** development e.g. commercial, the FRA should use the 'central' climate change allowance (20%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'higher central' allowance (25%) where feasible.

Some 'water compatible' and 'less vulnerable' development such as agricultural developments/structures, or stables etc, by their nature may be floodable and therefore the raising of floor levels may not be feasible/practicable. In these cases, we would suggest that any storage in these buildings, including any flood susceptible electrics, or items that may be damaged should be sited above possible flood levels, in order to prevent flood risk and associated pollution.

*** For '**more vulnerable'** development, where overnight accommodation is proposed, the FRA should demonstrate that the development has **safe, pedestrian access** above the 1% river flood level plus climate change*. Pedestrian access should preferably remain flood free in a 1% river flood event plus climate change. However, in cases where this may not be achievable, the FRA may demonstrate that pedestrian access is acceptable based on an appropriate assessment of 'hazard risk' including water depth, velocity and distance to higher ground (above the 1% river flood level plus climate change). Reference should be made to DEFRA Hazard risk (FD2320) – 'Danger to People for Combinations of Depth & Velocity' (see Table 13.1 – DEFRA/EA Flood Risk Assessment Guidance for New Development FD2320 at:
http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/FD2320_3364_TRP_pdf.sflb.ashx

Given our role and responsibilities we would not make comment on the safety of the access or object on this basis. This does not mean we consider that the access is safe or the proposals acceptable in this regard. We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider this to be safe in accordance with the guiding principles of the NPPG.

Furthermore access and egress by vehicular means is also a matter for your Emergency Planners and the Emergency Services.

A Flood Evacuation Management Plan may also be appropriate, see note below.

- Applications involving intensification of use, for example conversion of buildings to provide additional residential units, should consider safe access as a risk. It may be

possible to reduce the risk of flooding to an existing access through minor modifications to ground levels or alternative provision.

- For '**less vulnerable'** development (especially those uses where there are people occupying the building and/or vehicles are present, e.g. office, retail) the FRA should consider **safe access** above the 1% river flood level plus climate change. However, given the nature of this type of proposal we would advise that this is considered as a less critical risk i.e. future occupants may not be able to access the proposed development (building and/or any car park) in design flood events. On this basis, this risk could be managed by implementation of a flood evacuation plan (see below) in consultation with your Emergency Planners.

Flood Evacuation Management Plan: The NPPG (paragraph 056) states that one of the considerations for safe occupation is whether adequate 'flood warning' would be available to people using the development.

Flood Warning: For your consideration, where no Flood Warning service is in place we would be unable to offer any notification of potential danger from rising levels.

Where the Flood Warning service consists of a Flood Alert, whilst this gives a level of flood awareness, it will not provide a detailed local warning to comprehensively inform evacuation.

Where a comprehensive Flood Warning service operates, a trigger level may be sought to assist in evacuation.

For information on developing a Flood Evacuation Management Plan see sub-section 22 of the Flood Risk and Coastal Change Section of the NPPG and our guidance online at: https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

We recommend you consult with your Emergency Planners and the Emergency Services to determine whether they consider the FEMP secures safe and sustainable development.

**** For surface water management advice, please contact your Lead Local Flood Authority (LLFA).

Background: Need for a FRA

There are three main flood risk considerations –

- The flood risk to the site, and any occupiers, resulting from a 1% event and an extreme flood event (i.e. a flood with between a 0.1% and 1% chance each year from rivers or between 0.1% and 0.5% chance each year from the sea) – **including climate change**.
- The flood risk resulting from the change of use of greenfield land to developed land which will reduce the natural drainage permeability of that land leading to increased flood risk elsewhere.
- The risk to occupiers and /or others of surface water flooding due to increased run-off. Even at outline stage the applicant needs to be able to demonstrate that surface water balancing can be achieved to a 1% (plus climate change) standard. All sites should aim to provide flood risk reduction/betterment.

The FRA should use available historic information, surveys and local knowledge to establish what the impact of flooding would have been based on previous events. This can then be used to establish any mitigation measures necessary to protect the development from future events.

It is possible that flooding may occur from a source other than that identified by the Environment Agency's 'indicative' Flood Zones, which may occur due to local sewer or other drainage constraints, groundwater and surface water run off problems in the area. These may be identified within Strategic Flood Risk Assessment for the relevant local authority. The FRA will need to investigate the cause and effect of such local flooding as well as identifying appropriate mitigation/flood risk reduction.

FURTHER INFORMATION:

Flood level data to assist the FRA and Flood Management Plan (where available) may be obtained from our Area Customers & Engagement team on telephone 03708 506506; shwgenquiries@environment-agency.gov.uk

Flood Risk Permit (Flood Defence Consents until 6 April 2016)
Works (including temporary) in, on or adjacent to a Main River/ Flood structure or Main river Floodplain may need a permit. See https://www.gov.uk/guidance/flood-risk-activities-environmental-permits For advice please phone 03708 506506 and ask for the Partnerships and Strategic Overview Team that covers your area.
(Note: Flood Defence Consents still apply to Ordinary watercourses – Contact your LLFA).

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[1] Main Rivers are indicated on our Flood Zone Maps by red lines. When determining whether to consult the EA, the LPA will need to check the Flood Zone Maps to see whether the site is affected by the floodplain of a main river (including backing up of any adjacent watercourse). You can also check the classification of the watercourse with the LLFA, some of which have produced Drainage and Flooding Interactive Maps.

[2] Flood risk 'Vulnerability' classification of development - see Table 2 at sub-section 25 of the Flood Risk and Coastal Change section of the NPPG.

SHROPSHIRE, HEREFORDSHIRE, WORCESTERSHIRE GLOUCESTERSHIRE AREA
LOCAL FLOOD RISK 'MATRIX'

A1 Development Category	B1 Development (including boundary walls etc.) within 8 METRES of the top of a bank of a Main River, or includes culverting or control of flow	C1 Development (including boundary walls etc.) within byelaw of the top of a bank of an Ordinary Watercourse, or includes culverting or control of flow	D1 ORDINARY WATERCOURSE Within Flood Zone 3	E1 ORDINARY WATERCOURSE Within Flood Zone 2	F1 MAIN RIVER Within Flood Zone 3	G1 MAIN RIVER Within Flood Zone 2	H1 Within Flood Zone 1
A2 Householder development and alterations + Non residential extensions with a footprint of less than 250m2	B2 Consult EA on Flood Risk Permit (formerly Flood Defence Consent)	C2 No EA consultation required (Contact LLFA)	D2 STANDING ADVICE - see 'minor development process note'.	E2 STANDING ADVICE - see 'minor development process note'.	F2 STANDING ADVICE - see 'minor development process note'.	G2 STANDING ADVICE - see 'minor development process note'.	H2 No EA consultation required
A3 Change of use resulting in 'Water Compatible' or 'Less Vulnerable' Development*	B3 No EA consultation required	C3 No EA consultation required (Contact LLFA)	D3 STANDING ADVICE - see 'development in Flood Zone 3 process note' for ordinary watercourses; **unless RED BOX**	E3 No EA consultation required	F3 STANDING ADVICE - see 'development in Flood Zone 3 process note' for Main Rivers; **unless RED BOX**	G3 No EA consultation required	H3 No EA consultation required
A4 Change of use resulting in 'Essential Infrastructure', 'Highly Vulnerable' or Ltd 'More Vulnerable' Development*	B4 No EA consultation required	C4 No EA consultation required (Contact LLFA)	D4 STANDING ADVICE - see 'development in Flood Zone3 process note' for ordinary watercourses; **unless RED BOX**	E4 STANDING ADVICE - see 'development in Flood Zone 2 process note' for ordinary watercourses; **unless RED BOX**	F4 Consult EA with FRA (see 'development in Flood Zone 3 process note')	G4 STANDING ADVICE - see 'development in Flood Zone 2 process note' for Main Rivers; **unless RED BOX**	H4 No EA consultation required
A5 Operational Development with a footprint up to 1000m2 (where not included in A2)	B5 Consult EA on Flood Risk Permit (formerly Flood Defence Consent)	C5 No EA consultation required	D5 STANDING ADVICE - see 'development in Flood Zone 3 process note' for ordinary watercourses; **unless RED BOX**	E5 STANDING ADVICE - see 'development in Flood Zone 2 process note' for ordinary watercourses; **unless RED BOX**	F5 STANDING ADVICE - see 'development in Flood Zone 3 process note' for Main Rivers'; **unless RED BOX**	G5 STANDING ADVICE - see 'development in Flood Zone 2 process note' for Main Rivers; **unless RED BOX**	H5 No EA consultation required.
A6 Operational Development with a footprint greater than 1000m2 and up to 1 hectare	B6 Consult EA on Flood Risk Permit (formerly Flood Defence Consent)	C6 No EA consultation required (Contact LLFA)	D6 Consult EA with FRA and Sequential Test evidence (see 'development in Flood Zone 3 process note' for Ordinary Watercourses)	E6 STANDING ADVICE - see 'development in Flood Zone 2 process note' for ordinary watercourses; **unless RED BOX**	F6 Consult EA with FRA and Sequential Test evidence (see 'development in Flood Zone 3 process note' for Main Rivers)	G6 STANDING ADVICE - see 'development in Flood Zone 2 process note' for Main Rivers; **unless RED BOX**	H6 No EA consultation required.
A7 Operational Development greater than 1ha	B7 Consult EA on Flood Risk Permit (formerly Flood Defence Consent)	C7 No EA consultation required (Contact LLFA)	D7 Consult EA with FRA and Sequential Test evidence (see 'development in Flood Zone 3 process note' for Ordinary Watercourses)	E7 STANDING ADVICE - see 'development in Flood Zone 2 process note' for ordinary watercourses; **unless RED BOX**	F7 Consult EA with FRA and Sequential Test evidence (see 'development in Flood Zone 3 process note' for Main Rivers)	G7 STANDING ADVICE - see development in Flood Zone 2 process note' for Main Rivers; **unless RED BOX**	H7 No EA consultation required.

	Consult EA with information as detailed. Note: Highly vulnerable development is NOT appropriate in Flood Zone 3 and only water compatible development is appropriate in functional floodplain (Flood Zone 3b) Essential Infrastructure in Flood Zone 3 would need to pass Exception Test (See Table 3 in sub-section 25 within the Flood Risk and Coastal Change Section of the Planning Practice Guidance)
	Do NOT consult the Environment Agency - Substantive response = no comment
	Standing advice / standard comments (some cells may be red box depending on the scale and type of development proposed).
*	EA has no commment to make regarding change of use applications not included within this matrix. The advice in this matrix also applies to Prior Approval enquiries for Permitted Development.

RED BOX INFORMATION (in 'hover' boxes in the electronic version of this matrix):

D3 and F3	Development is RED BOX (consult EA for bespoke response) when: change of use of building(s) with a footprint over 1000m2
D4 and D5	Development is RED BOX (consult EA for bespoke response) when: 'Essential Infrastructure' and/or 'Highly Vulnerable' development; the following type of 'More Vulnerable' development: Hospitals, Residential Institutions (including student halls of residence) and hazardous waste management sites; 10 or more dwellings; 10 or more caravan or camping pitches
E4, 5, 6 and G4, 5, 6	Development is RED BOX (consult EA for bespoke response) when: 'Essential Infrastructure' and/or 'Highly Vulnerable'
E7 and G7	Development is RED BOX (consult EA for bespoke response) when: 'Essential Infrastructure' and/or 'Highly Vulnerable', 'More Vulnerable' where landfill, hazardous waste site or camping/caravan site
F5	Development is RED BOX (consult EA for bespoke response) when: 'Essential Infrastructure', 'Highly Vulnerable' and/or 'More Vulnerable' development

Information on Flood Zones, Flood Risk Vulnerability Classifications, and Flood Risk Vulnerability & Flood Zone 'Compatibility' are all detailed in Tables 1, 2 and 3 respectively in sub-section 25 within the Flood Risk and Coastal Change Section of the PPG available at: http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/

The advice in this matrix applies to Planning Applications, Formal Prior Approval submissions (including for Permitted Development) and other Pre-Application consultations.

Flood Risk and Coastal Change

Climate Change allowances for planning (SHWG area)

March 2016
(updated May 2017)

The National Planning Practice Guidance refers to Environment Agency guidance on considering climate change in planning decisions which is available online: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

This has been updated and replaces the September 2013 guidance.

It should be used to help planners, developers and advisors implement the National Planning Policy Framework (NPPF)'s policies and practice guidance on flood risk. It will help inform Flood Risk Assessments (FRA's) for planning applications, local plans, neighbourhood plans and other projects.

Fluvial flooding – peak river flows

Table 1 of the guidance advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to a river basin district catchment.

In Shropshire, Herefordshire, Worcestershire and Gloucestershire area, we would refer you to the relevant extract from Table 1 below. This outlines the **'peak river flows'** within the 'Severn River Basin District', and specifies the range of percentage allowances to reflect individual development's lifetime and vulnerability. For example, residential would be 100 years (so 2070-2115).

Table 1 Extract

Severn Peak River Flows: Total potential change anticipated	2015-39	2040-2069 (less vulnerable)	2070-2115 (more vulnerable)
Upper end	25%	40%	70%
Higher central	15%	25%	35%
Central	10%	20%	25%

Sea Level rise allowances

Table 3 of the guidance (extract below) indicates that net sea level risk remains unchanged from the 2013 version.

Area of England	1990 - 2025	2026 - 2050	2051 - 2080	2081 - 2115	Cumulative (1990 - 2115)
South West	3.5mm p/a	8mm p/a	11.5mm p/a	14.5mm p/a	1.18m

Flood Risk Assessment considerations:

The design flood (1% flood level fluvial, or 0.5% tidal, plus climate change allowance) should be used to inform the sequential test, including appropriate location of built development; consideration of flood risk impacts, mitigation/enhancement and ensure 'safe' development.

Vulnerability classification

– Development classed as 'Essential Infrastructure' (as defined within Table 2 - Flood Risk Vulnerability Classification, Paragraph: 066 Reference ID: 7-066-20140306 of the NPPG) should be designed to the 'upper end' climate change allowance (70%).

– For highly vulnerable or more vulnerable development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'upper end' allowance (70%) where feasible.

– For water compatible or less vulnerable development e.g. commercial, the FRA should use the 'central' climate change allowance (20%), as a minimum, to inform built in resilience; but aim to incorporate managed adaptive approaches/measures for the 'higher central' allowance (25%) where feasible.

Modelling approach

– Major Development:

  For 'major' development (as defined within The Town and Country Planning Development Management Procedure (England) Order 2015)*, see definition note below, we would expect a detailed FRA to provide an appropriate assessment (hydraulic model) of the 1% with relevant climate change ranges.

  There are two options:

  Scenario 1 - Produce a model and incorporate relevant climate change allowances in Table 1.

  Scenario 2 - Re-run an existing model and incorporate relevant climate change allowances in Table 1.

– Non Major Development:

  For 'non major' development, we would advise that a model is produced or existing model is re-run, similar to the above approach (Scenario 1 and 2). This would give a greater degree of certainty on the design flood extent to inform a safe development.

  However, for 'non major' development only, in the absence of modelled climate change information it may be reasonable to utilise an alternative approach. To assist applicants and Local Planning Authorities we have provided some 'nominal' climate change allowances within the 'Table of nominal allowances' below. These should be considered as appropriate within any FRA. There are three additional options:

  Scenario 3 - Where previous modelled data (for a variety of return periods) is available, you could interpolate your own climate change figure (see note iv below).

  Scenario 4 - Where the 1% level is available from an existing model add on the relevant 'nominal climate change allowance' provided in the 'Table of nominal allowances' below.

  Scenario 5 - Establish the 1% level, for example using topographical levels (including LiDAR) and assessment of watercourse flow and nature and then add on the relevant 'nominal climate change allowances' provided in the 'Table of nominal allowances' below.

*Note: For definitions of 'major' development see 'Interpretation 2.—(1)', on page 5, at www.legislation.gov.uk/uksi/2015/595/pdfs/uksi_20150595_en.pdf

Table of Nominal Allowances

Watercourse	20% - 25%	35% - 40%	70%
Upper Severn River Wye River Teme	600mm	850mm	1500mm
River Avon	400mm	600mm	1000mm
Lower Severn	400mm	600mm	1000mm
Tributaries and 'ordinary watercourses'	200mm	300mm	500mm

Notes to above:-

(i) Watercourse definition:
The "Upper Severn"/"Lower Severn" boundary is taken as Lincomb Weir, Worcestershire (national grid reference SO8196869458).

An 'Ordinary Watercourse' is a watercourse that does not form part of a main river. Main Rivers are indicated on our Flood Map. You can also check the classification of the watercourse with the LLFA, some of which have produced Drainage and Flooding Interactive Maps.

(ii) Where a site is near the confluence of two, or more, watercourses, the FRA should use the larger river climate change allowances.

(iii) We may hold more precise information for some of the "tributaries". We would recommend that you seek this information from us via a 'pre-planning enquiry/data request', to the email address below.

(iv) We would also recommend that you contact us for our modelled '20%' allowances and associated flow data. This is available for some rivers. This data may help inform a more detailed climate change analysis (where necessary), including any interpolation of levels or flow to create a 'stage discharge rating' in order to estimate the required percentage; or be of assistance to inform 'less vulnerable' or 'water compatible' development proposals.

IMPORTANT NOTE
Please note the nominal climate change allowances are provided as a pragmatic approach, for consideration, in the absence of a modelled flood level and the applicant undertaking a detailed model of the watercourse. Use of nominal climate change allowances are not provided/ recommended as a preference to detailed modelling and historical data.

The Local Planning Authority may hold data within their Strategic Flood Risk Assessment (SFRA), or any future updates, which may help inform the above.

FREEBOARD NOTE
It is advised that Finished Floor Levels should be set no lower than '600mm' above the 1% river flood level plus climate change. Flood proofing techniques might be considered where floor levels cannot be raised (where appropriate). This 600mm freeboard takes into account any uncertainties in modelling/flood levels and wave action (or storm surge effects).

Surface Water

Table 2 of the guidance also indicates the relevant increases that surface water FRA should consider for an increase in peak rainfall intensity.

The following table is for **'peak rainfall intensity'** allowance in small and urban catchments. Please note that **surface water (peak rainfall intensity) climate change allowances should be discussed with the Lead Local Flood Authority (LLFA).**

Peak Rainfall Intensity - Applies across all of England	Total potential change anticipated for 2010-2039	Total potential change anticipated for 2040-2059	Total potential change anticipated for 2060-2115
Upper end	10%	20%	40%
Central	5%	10%	20%

Note to above:-

For river catchments around or over 5 square kilometres, the peak river flow allowances are appropriate.

Produced by: shwgplanning@environment-agency.gov.uk

West Midlands Area -

Shropshire, Herefordshire, Worcestershire and Gloucestershire Sustainable Places Team.

B. Detailed maintenance costs for each feature

Maintenance requirements and costs of ponds and wetlands

Most of the maintenance will be required as part of the overall open space maintenance. The costs are based on the assumption that a specific visit to site is made to carry out the maintenance in the SUDS pond or wetland. If they are incorporated into the general maintenance there will only be some additional costs where extra work relating to the SUDS feature needs to be undertaken above and beyond the cost for the general landscape. Items that are specific to a SUDS pond or wetland that will be carried out in addition to general landscape maintenance are highlighted in blue. The costs assume that access to the site is easy. Minimum costs are based on the cost to visit a site and the rates for larger areas are based on information in the SPON's External Works and Landscape Price Book 2008 and will be updated as necessary. There is no allowance for profit in the costs.

Item	Frequency	Comments	Cost	
			Minimum cost for small areas of POS (based on fixed cost of a site visit)	£/100m^2 per visit for larger POS areas
Litter removal	1 per month	Litter quantity and characteristics will be dependant on the site Litter may collect in ponds and wetland features Litter collection may be part of the general landscape maintenance Litter collection should be undertaken at each site visit and the beginning of any maintenance task, particularly grass cutting All litter must be removed from site	1 site visit with 3 men, 1 light van, mower and ancillary equipment. Half day visit comprises 3 hours on site and 1 hour travelling. Half day maximum POS area including SUDS is about 4000 m^2 (including pond or wetland vegetation). Cost per visit = £249	0.67
Inspect control structures to/from pond or wetland	1 per month	Surface control structures can be slot weirs, V-notch or gabion baskets with control in the stone fill. They can be inspected without removing covers or special keys		£5/ structure
Grass cutting on slopes around pond above temporary water level – amenity grass	1 per month	All grass cuttings managed on site in wildlife or compost piles	Full day visit comprises 7 hours on site and 1 hour travelling. One day maximum POS area including SUDS is about 10000m^2 (including pond or wetland vegetation) Cost per visit = £498	1.14
Scrub clearance from bankside	1 per year	Overhanging branches and encroaching growth will normally be undertaken as part of landscape maintenance		5.83
Cut 25% to 30% wetland vegetation and remove to site wildlife piles	1 per year			3.38
Remove planting and silt from 25% to 30% of base and place in site piles	1 per 5 years	Silt accumulation is slow if 'source control' features are located upstream in the 'management train' Only required once every 5 years	Assume 1 site visit with 3 men, 1 light van, small excavator and ancillary equipment. Total pond area up to 1200m^2 Cost per visit = £689 Disposal of silt by truck with mechanical grab (assuming it is not special waste) £51.18/m^3	
Extra cost if silt, grass cuttings, etc are removed from site during routine maintenance	To suit other operations	Ideally all cuttings should be used on site to construct and maintain wildlife piles but this may not be the best option in public open space and removal from the site may be needed.	£2.65/100m^2 cleared. Assumes the waste is not classified as special waste and proportion of silt is minor (which should be the case if source control is in place upstream). Disposal of silt by truck with mechanical grab (assuming it is not hazardous or special waste) £55/m^3	

= SUDS Specific Items

Ponds and Wetlands

No per year	General rates - cost per visit to site	10000 m2 site				
	Item	**No**	**Unit**	**Rate**	**Total per visit for site inc all SUDS 10000 m2 site**	**Page reference in SPON'S**
12	Litter removal	10000	100m2	0.67	67	Pg 216 collection and disposal of litter from isolated grassed area
12	Inspect control structures to pond or wetland (assumes surface features and no special tools required)	4	No	5	20	Allow £5 per structure
12	Grass cutting on slopes around pond above temporary water level - amenity grass	10000	100m2	1.14	114	Page 214 self propelled rotary mower, 91cm cut width, removing arisings not exceeding 30 deg from horizonal (0.36 + 0.78 = 1.14)
1	Scrub clearance from bankside	10000	100m2	5.83	583	Page 216 use rate for clearing leaf and other debris from verges by hand
1	Cut 25% to 30% wetland vegetation and remove to site wildlife piles	2500	100m2	3.38	84.5	Page 214 cutting grass or light woody undergrowth using strimmer not exceeding 30 deg
1	Removal of all arisings (scrub clearance and wetland vegetation)	2500	100m2	2.65	66.25	Page 216 use rate for removal of arisings from areas containing shrub beds.
	Total per visit if all items completed				**934.75**	
	Total per visit for litter removal, inspection and grass cutting				**201**	
	Total annual cost				**3145.75**	
	Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow 15%				**471.86**	

Cost per visit based on labour rates

Item	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 3	8	hour	15.5	186.00	372.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Small ride on mower	8	hour	8.75	35.00	70.00	Assumes rate for mower is same as for a mini excavator, self drive and no delivery charge or minimum hire
Ancillary tools and equipment	1	day	20	10.00	20.00	Allowance for tools such as strimmers, etc
Disposal of cuttings off site	1	Item	150	150.00	150.00	Cost based on small skip specific for disposal from a particular site - 6m^3 (The more sites that are maintained the less this cost may become)
Total per visit				**249.00**	**498.00**	
Total for 12 visits per year				**2988.00**	**5976.00**	
Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow one extra visit per year				**249.00**	**498.00**	

Pond silt removal every 5 years

Assume a specific visit is made for this work	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 3	8	hour	15.5	186.00	372.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Small mini excavator, rubber tracks (self drive)	8	hour	8.75	35.00	70.00	Page 15, self drive and no delivery charge. Minimum hire 8 hours
Delivery charge in Cambridge from local hire company	1	Item	30	30.00	30.00	Assume £30 for both ways
Ancillary tools and equipment	1	day	20	10.00	20.00	Allowance for tools such as strimmers, etc
Disposal of silt for SUDS serving 1 Ha site (volume depends on catchment area)	0.63	m^3	51.18	161.00	161.00	Allow 0.63m^3 per year per ha of catchment area (impermeable), based on 755kg/ha/yr and density of 1200kg/m^3 from Darcy et al (2000). Cost from Page 106, wet clay
Total				**440.00**	**689.00**	

Notes
All rates and base costs taken from SPON'S External Works and Landscape Price Book 2008

Silt loading

Parameter	Units	Value	
Silt load (TSS)	kg/ha/yr	755	Maximum load for high density housing
Silt density in pond	kg/m^3	1200	
Silt accumulation pond	m^3/y/ha impermeable catchment area	0.63	

Maintenance requirements and costs of basins

Most of the maintenance will be required as part of the overall open space maintenance. The costs are based on the assumption that a specific visit to site is made to carry out the maintenance in the SUDS basin. If they are incorporated into the general maintenance there will only be some additional costs where extra work relating to the SUDS feature needs to be undertaken above and beyond the cost for the general landscape. Items that are specific to a basin that will be carried out in addition to general landscape maintenance are highlighted in blue. The costs assume that access to the site is easy. Minimum costs are based on the cost to visit a site and the rates for larger areas are based on information in the SPON's external works and landscape price book 2008 and will be updated as necessary. There is no allowance for profit in the costs.

<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Frequency</th><th rowspan="2">Comments</th><th colspan="2">Cost</th></tr>
<tr><th>Minimum cost for small areas of POS (based on fixed cost of a site visit)</th><th>£/100m^2 per visit for larger areas of POS</th></tr>
<tr><td>Litter removal</td><td>1 per month</td><td>Litter quantity and characteristics will be dependant on the site
Litter may collect in ponds and wetland features
Litter collection may be part of the general landscape maintenance
Litter collection should be undertaken at each site visit and the beginning of any maintenance task, particularly grass cutting
All litter must be removed from site</td><td rowspan="5">1 site visit with 3 men, 1 light van, mower and ancillary equipment.
Half day visit comprises 3 hours on site and 1 hour travelling.
Half day maximum area = 4000 m^2 (including pond or wetland vegetation)
Cost per visit = £249</td><td>0.67</td></tr>
<tr><td>Inspect control structures to/from basin</td><td>1 per month</td><td>Surface control structures can be slot weirs, V-notch or gabion baskets with control in the stone fill. They can be inspected without removing covers or special keys. Maintenance of control structures in manhole chambers will be more expensive.</td><td>£5/ structure</td></tr>
<tr><td>Grass cutting on slopes and in bottom of basin – amenity grass</td><td>1 per month</td><td>All grass cuttings managed on site in wildlife or compost piles</td><td rowspan="3">Full day visit comprises 7 hours on site and 1 hour travelling.
One day maximum area = 10000m^2 (including pond or wetland vegetation)
Cost per visit = £498</td><td>1.14</td></tr>
<tr><td>Scrub clearance from bankside</td><td>1 per year</td><td>Overhanging branches and encroaching growth will normally be undertaken as part of landscape maintenance</td><td>5.83</td></tr>
<tr><td>Habitat mosaic 30% cut and remove to site wildlife piles (see Section on ponds and wetlands)</td><td>1 per year</td><td>Carry out September to November if possible to minimise disruption to wildlife</td><td>3.38</td></tr>
<tr><td>Scarify and spike base of infiltration basin if necessary at same time</td><td>1 per 5 years</td><td>This would typically be undertaken at the same time and as part of the visit to remove silt.</td><td>Inc in silt removal costs with nominal extra allowance for scarifying plant</td><td>1.29</td></tr>
<tr><td>Remove silt from base and place in site piles (see Section on ponds and wetlands)</td><td>1 per 5 years</td><td>Silt accumulation is slow if 'source control' features are located upstream in the 'management train' Only required once every 5 years</td><td colspan="2">Assume 1 site visit with 3 men, 1 light van, small excavator and ancillary equipment. Basin area up to 1200m^2
Cost per visit = £689
Disposal of silt by truck with mechanical grab (assuming it is not special waste) £51.18/m^3</td></tr>
<tr><td>Extra cost if silt, grass cuttings, etc are removed from site during routine maintenance</td><td>To suit other operations</td><td>Ideally all cuttings should be used on site to construct and maintain wildlife piles but this may not be the best option in public open space and removal from the site may be needed.</td><td colspan="2">£2.65/m^2 cleared.
Assumes the waste is not classified as special waste and proportion of silt is minor (which should be the case if source control is in place upstream). Disposal of silt by truck with mechanical grab (assuming it is not hazardous or special waste) £55/m^3</td></tr>
</table>

= SUDS Specific Items

Basins

General rates - cost per visit to site **10000 m^2 site**

No per year	Item	No	Unit	Rate	Total per visit for site inc all SUDS 10000 m2 site	Page reference in SPON'S
12	Litter removal	10000	$100m^2$	0.67	67	Pg 216 collection and disposal of litter from isolated grassed area
12	Inspect control structures to basin (assumes surface features and no special tools required)	4	No	5	20	Allow £5 per structure
12	Grass cutting on slopes and in bottom of basin - amenity grass	10000	$100m^2$	1.14	114	Page 214 self propelled rotary mower, 91cm cut width, removing arisings not exceeding 30 deg from horizonal (0.36 + 0.78 = 1.14)
1	Scrub clearance from bankside	10000	$100m^2$	5.83	583	Page 216 use rate for clearing leaf and other debris from verges by hand
1	Habitat mosaic 30% cut and remove to site wildlife piles	3300	$100m^2$	3.38	111.54	Page 214 cutting grass or light woody undergrowth using strimmer not exceeding 30 deg
1	Removal of all arisings (scrub clearance and vegetation)	3300	$100m^2$	2.65	87.45	Page 216 use rate for removal of arisings from areas containing shrub beds.
	Total per visit if all items completed				**982.99**	
	Total per visit for litter removal, inspection and grass cutting				**201**	
	Total annual cost				**3193.99**	
	Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow 15%				**479.10**	

Cost per visit based on labour rates

Item	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 3	8	hour	15.5	186.00	372.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Small ride on mower	8	hour	8.75	35.00	70.00	Assumes rate for mower is same as for a mini excavator, self drive and no delivery charge or minimum hire
Ancillary tools and equipment	1	day	20	10.00	20.00	Allowance for tools such as strimmers, etc
Disposal of cuttings off site	1	Item	150	150.00	150.00	Cost based on small skip specific for disposal from a particular site - $6m^3$ (The more sites that are maintained the less this cost may become)
Total per visit				**249.00**	**498.00**	
Total for 12 visits per year				**2988.00**	**5976.00**	
Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow one extra visit per year				**249.00**	**498.00**	

Basin silt removal, scarifying and spiking every 5 years

Assume a specific visit is made for this work	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 3	8	hour	15.5	186.00	372.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Small mini excavator, rubber tracks (self drive)	8	hour	8.75	70.00	70.00	Page 15, self drive and no delivery charge. Minimum hire 8 hours
Delivery charge in Cambridge from local hire company	1	Item	30	30.00	30.00	Assume £30 for both ways
Ancillary tools and equipment to scarify and spike	1	day	40	20.00	40.00	Allowance for tools such as strimmers, pedestrian operated scarifying equipment, etc
Disposal of silt from SUDS serving 1 Ha catchment (volume depends on catchment area)	0.63	m^3	51.18	161.00	161.00	Allow $0.63m^3$ per year per ha of catchment area (impermeable), based on 755kg/ha/yr and density of $1200kg/m^3$ from Darcy et al (2000). Cost from Page 106, wet clay
Total				**485.00**	**709.00**	

Notes
All rates and base costs taken from SPON'S External Works and Landscape Price Book 2008

Scarifying and spiking every five years

General rates - cost per visit to site, $10000m^2$ site

Item	No	Unit	Rate	Total per visit for $4000m^2$ site inc all SUDS	Page reference in SPON'S
Scarifying using pedestrian operated plant	10000	$100m^2$	1.29	129	Pg 215 Scarifying mechanical
Removal and disposal of arisings	10000	$100m^2$	11.41	1141	Pg 215

Silt loading

Parameter	Units	Value	
Silt load (TSS)	kg/ha/yr	755	Maximum load for high density housing
Silt density in basin	kg/m^3	1200	
Silt accumulation basin	m^3/y/ha impermeable catchment area	0.63	

Maintenance requirements and costs of swales and filter strips

Most of the maintenance will be required as part of the overall open space maintenance. The costs are based on the assumption that a specific visit to site is made to carry out the maintenance in the SUDS swale or filter strip. If they are incorporated into the general maintenance there will only be some additional costs where extra work relating to the SUDS feature needs to be undertaken above and beyond the cost for the general landscape. Items that are specific to a SUDS swale or filter strip that will be carried out in addition to general landscape maintenance are highlighted in blue. The costs assume that access to the site is easy. Minimum costs are based on the cost to visit a site and the rates for larger areas are based on information in the SPON's External Works and Landscape Price Book 2008 and will be updated as necessary. There is no allowance for profit in the costs.

<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Frequency</th><th rowspan="2">Comments</th><th colspan="2">Cost</th></tr>
<tr><th>Minimum cost for small areas of POS (based on fixed cost of a site visit)</th><th>£/100m^2 per visit for larger areas of POS</th></tr>
<tr><td>Litter removal</td><td>1 per month</td><td>Litter quantity and characteristics will be dependant on the site
Litter may collect in swales
Litter collection may be part of the general landscape maintenance
Litter collection should be undertaken at each site visit and the beginning of any maintenance task, particularly grass cutting
All litter must be removed from site</td><td rowspan="5">1 site visit with 3 men, 1 light van, mower and ancillary equipment.
Half day visit comprises 3 hours on site and 1 hour travelling.
Half day maximum area = 4000 m^2 (including pond or wetland vegetation)
Cost per visit = £249
Full day visit comprises 7 hours on site and 1 hour travelling.
One day maximum area = 10000m^2 (including pond or wetland vegetation)
Cost per visit = £498</td><td>0.67</td></tr>
<tr><td>Inspect control structures to/from swale</td><td>1 per month</td><td>Surface control structures can be slot weirs, V-notch or gabion baskets with control in the stone fill. They can be inspected without removing covers or special keys. Maintenance of control structures in manhole chambers will be more expensive.</td><td>£5/ structure</td></tr>
<tr><td>Grass cutting in swale – amenity grass</td><td>1 per month</td><td>All grass cuttings managed on site in wildlife or compost piles</td><td>1.14</td></tr>
<tr><td>Scrub clearance from bankside</td><td>1 per year</td><td>Overhanging branches and encroaching growth will normally be undertaken as part of landscape maintenance</td><td>5.83</td></tr>
<tr><td>Remove planting and silt from 25% to 30% of base and place in site piles</td><td>1 per 5 years</td><td>Silt accumulation is slow if swale is design ed as a source control feature. Carry out September to November if possible to minimise disruption to wildlife.
Only required once every 5 years</td><td colspan="2">Assume 1 site visit with 3 men, 1 light van, small excavator and ancillary equipment. Pond area up to 1200m^2
Cost per visit = £689
Disposal of silt by truck with mechanical grab (assuming it is not special waste) £51.18/m^3</td></tr>
<tr><td>Extra cost if silt, grass cuttings, etc are removed from site during routine maintenance</td><td>To suit other operations</td><td>Ideally all cuttings should be used on site to construct and maintain wildlife piles but this may not be the best option in public open space and removal from the site may be needed.</td><td colspan="2">£2.65/100m^2 cleared.
Assumes the waste is not classified as special waste and proportion of silt is minor (which should be the case if swale is designed as a source control feature). Disposal of silt by truck with mechanical grab (assuming it is not hazardous or special waste) £55/m^3</td></tr>
</table>

= SUDS Specific Items

Swales and filter strips

General rates - cost per visit to site — **10000 m^2 site**

No per year	Item	No	Unit	Rate	Total per visit for site inc all SUDS 10000 m2 site	Page reference in SPON'S
12	Litter removal	10000	$100m^2$	0.67	67	Pg 216 collection and disposal of litter from isolated grassed area
12	Inspect control structures to swale (assumes surface features and no special tools required)	4	No	5	20	Allow £5 per structure
12	Grass cutting on slopes and in bottom of swale - amenity grass	10000	$100m^2$	1.14	114	Page 214 self propelled rotary mower, 91cm cut width, removing arisings not exceeding 30 deg from horizonal (0.36 + 0.78 = 1.14)
1	Scrub clearance from bankside	10000	$100m^2$	5.83	583	Page 216 use rate for clearing leaf and other debris from verges by hand
1	Removal of all arisings (scrub clearance and vegetation)	3300	$100m^2$	2.65	87.45	Page 216 use rate for removal of arisings from areas containing shrub beds.
	Total per visit if all items completed				**871.45**	
	Total per visit for litter removal, inspection and gress cutting				**201**	
	Total annual cost				**3082.45**	
	Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow 15%				**462.37**	

Cost per visit based on labour rates

Item	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 3	8	hour	15.5	186.00	372.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Small ride on mower	8	hour	8.75	35.00	70.00	Assumes rate for mower is same as for a mini excavator, self drive and no delivery charge or minimum hire
Ancillary tools and equipment	1	day	20	10.00	20.00	Allowance for tools such as strimmers, etc
Disposal of cuttings off site	1	Item	150	150.00	150.00	Cost based on small skip specific for disposal from a particular site - $6m^3$ (The more sites that are maintained the less this cost may become)
Total per visit				**249.00**	**498.00**	
Total for 12 visits per year				**2988.00**	**5976.00**	
Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow one extra visit per year				**249.00**	**498.00**	

Swale silt removal every 5 years

Assume a specific visit is made for this work	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 3	8	hour	15.5	186.00	372.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Small mini excavator, rubber tracks (self drive)	8	hour	8.75	70.00	70.00	Page 15, self drive and no delivery charge. Minimum hire 8 hours
Delivery charge in Cambridge from local hire company	1	Item	30	30.00	30.00	Assume £30 for both ways
Ancillary tools and equipment	1	day	40	20.00	40.00	Allowance for tools such as strimmers, pedestrian operated scarifying equipment, etc
Disposal of silt assuming SUDS serves 1 Ha catchment (volume depends on catchment area)	0.63	m^3	51.18	161.00	161.00	Allow $0.63m^3$ per year per ha of catchment area (impermeable), based on 755kg/ha/yr and density of $1200kg/m^3$ from Darcy et al (2000). Cost from Page 106, wet clay
Total				**485.00**	**709.00**	

Notes

All rates and base costs taken from SPON'S External Works and Landscape Price Book 2008

Alternative rate per metre of swale

Clear vegetation from swale with strimmer	100 m	149.12	Pg 256 Ditching clear only vegetation from ditch not exceeding 1.5m deep. Dispose to spoil heaps width at top 2.5m to 4m
Disposal of vegetation off site	100 m	1193	Allow extra for disposal off site by truck. Use rate from page 216 for disposal of arisings from leaf clearance based on plan area of 1m length of swale - $4.5m^2$ and a rate of $£2.65/m^2$ typically if shallow as required in this guide. Deeper swales will be more expensive.
Total cost per 100 metre of swale		**1342.12**	

Silt loading

Parameter	Units	Value	
Silt load (TSS)	kg/ha/yr	755	Maximum load for high density housing
Silt density in swale	kg/m^3	1200	
Silt accumulation swale	m^3/y/ha impermeable catchment area	0.63	

Maintenance requirements and costs of filter drains

Most of the maintenance will be required as part of the overall open space maintenance. The costs are based on the assumption that a specific visit to site is made to carry out the maintenance in the SUDS filter drain. If they are incorporated into the general maintenance there will only be some additional costs where extra work relating to the SUDS feature needs to be undertaken above and beyond the cost for the general landscape. Items that are specific to a SUDS filter drain that will be carried out in addition to general landscape maintenance are highlighted in blue. The costs assume that access to the site is easy. Minimum costs are based on the cost to visit a site and the rates for larger areas are based on information in the SPON's External Works and Landscape Price Book 2008 and will be updated as necessary. There is no allowance for profit in the costs.

<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Frequency</th><th rowspan="2">Comments</th><th colspan="2">Cost</th></tr>
<tr><th>Minimum cost for small areas of POS (based on fixed cost of a site visit)</th><th>£/m per visit for longer lengths</th></tr>
<tr><td>Litter removal</td><td>1 per month</td><td>Litter quantity and characteristics will be dependant on the site
Litter may collect on top of filter drains
Litter collection may be part of the general landscape maintenance
Litter collection should be undertaken at each site visit and the beginning of any maintenance task, particularly grass cutting
All litter must be removed from site</td><td rowspan="2">1 site visit with 2 men, 1 light van and ancillary equipment.
Half day visit comprises 3 hours on site and 1 hour travelling.
Half day (including any other open areas or SUDS in site)
Cost per visit = £152

Full day visit comprises 7 hours on site and 1 hour travelling.
Full day (including any other open areas or SUDS in site)
Cost per visit = £304</td><td>0.67</td></tr>
<tr><td>Inspect control structures to/from filter drains</td><td>1 per month</td><td>Surface control structures can be slot weirs, V-notch or gabion baskets with control in the stone fill. They can be inspected without removing covers or special keys
Filter drains may well have control structures located in manholes or inspection chambers. Maintenance of control structures in manhole chambers will be more expensive.</td><td>£20/structure</td></tr>
<tr><td>Remove top 300mm of gravel, clean and replace.

Remove silt from site</td><td>1 per 5 years</td><td>Silt accumulation is slow if filter drain is protected by a filter strip or other source control feature</td><td colspan="2">Assume 1 site visit with 3 men, 1 light van, small excavator and ancillary equipment. Filter drain up to 100m length
Cost per visit = £866
Disposal of silt by truck with mechanical grab (assuming it is not hazardous or special waste) £55/m^3</td></tr>
</table>

= SUDS Specific Items

Filter drains

General rates - cost per visit to site **10000 m^2 site**

No per year	Item	No	Unit	Rate	Total per visit for site inc all SUDS 10000 m2 site	Page reference in SPON'S
12	Litter removal	10000	$100m^2$	0.67	67	Pg 216 collection and disposal of litter from isolated grassed area assume filter drain is maintained as part of wider management of area
12	Inspect control structures to filter drain (assumes surface features and no special tools required)	4	No	20	20	Allow £20 per structure as they are more likley to be in manholes for filter drains
	Total per visit if all items completed				**87**	
	Total per visit for litter removal, inspection and gress cutting				**87**	
	Total annual cost				**1044**	
	Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow 15%				**156.6**	

Cost per visit based on labour rates

Item	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 2	8	hour	15.5	124.00	248.00	Page 8 includes overheads, tools, site kit, etc but not profit. Assume that if visit is specifically to maintain filter drain then a gang of 2 men will be used.
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Ancillary tools and equipment	1	day	20	10.00	20.00	Allowance for tools
Total per visit				**152.00**	**304.00**	
Total for 12 visits per year				**1824.00**	**3648.00**	
Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow one extra visit per year				**152.00**	**304.00**	

Gravel removal by machine every 5 years

Assume a specific visit is made for this work	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 2	8	hour	15.5	124.00	248.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Small mini excavator, rubber tracks (self drive)	8	hour	8.75	35.00	70.00	Page 15, self drive and no delivery charge. Minimum hire 8 hours
Delivery charge in Cambridge from local hire company	1	Item	30	30.00	30.00	Assume £30 for both ways
Disposal of gravel (top 300mm). This is worst case costs. Ideally the gravel would be cleaned and replaced. Only the geotextile would require replacement. Assume 100m length	18.00	m^3	26.77	240.93	481.86	Assume can excavate and replace 100m per day. Excavation = 0.3 x 0.6 x 100 = $18m^3$. 0.6m wide drain and disposal rate is for slightly contaminated material (majority will be the clean gravel pieces) Pg 105 disposal mechanical Recycled Materials Ltd
Install new geotextile assume 100m length	60.00	m^2	0.95	28.50	57.00	Pg 261 extra over for filter wrapping pipes with Terram or similar filter fabric. Replace top geotextile 0.6m by 100mm per metre length of drain
Replace gravel assume 100m length	18.00	m^3	40.7	366.30	732.60	Gravel = 0.3 x 0.6 x 100 = 18m3. 0.6m wide drain Page 137 Type 1 granular fill (rate /m^3 compacted material and compaction only)
Total				**447.93**	**865.86**	

Notes
All rates and base costs taken from SPON'S External Works and Landscape Price Book 2008

Alternative rate per metre of filter drain

Excavate gravel and replace	1	m	10.89	Pg 367 Excavate trench includes for excavation and filling with Type 2 (cost will be similar for filter drain material) and disposal of surplus soil. Not exceeding 0.5m depth.
Disposal off site	0.18	m^3	26.77	Allow extra for disposal as the gravel could be slightly contaminated.
Total cost per metre of filter drain			**37.66**	

Maintenance of canals, rills and treatment channels

Most of the maintenance will be required as part of the overall open space maintenance. The costs are based on the assumption that a specific visit to site is made to carry out the maintenance in the SUDS channels. If they are incorporated into the general maintenance there will only be some additional costs where extra work relating to the SUDS feature needs to be undertaken above and beyond the cost for the general landscape. Items that are specific to a SUDS channels that will be carried out in addition to general landscape maintenance are highlighted in blue. The costs assume that access to the site is easy. Minimum costs are based on the cost to visit a site and the rates for larger areas are based on information in the SPON's External Works and Landscape Price Book 2008 and will be updated as necessary. There is no allowance for profit in the costs.

<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Frequency</th><th rowspan="2">Comments</th><th colspan="2">Cost</th></tr>
<tr><th>Minimum cost for small areas less (based on fixed cost of a site visit)</th><th>£ per visit for lengths greater than ??m</th></tr>
<tr><td>Litter removal</td><td>1 per month</td><td>Litter quantity and characteristics will be dependant on the site
Litter may collect on top of filter drains
Litter collection may be part of the general landscape maintenance
Litter collection should be undertaken at each site visit and the beginning of any maintenance task, particularly grass cutting
All litter must be removed from site</td><td rowspan="2">1 site visit with 2 men, 1 light van and ancillary equipment.
Half day visit comprises 3 hours on site and 1 hour travelling.
Half day
Cost per visit = £152

Full day visit comprises 7 hours on site and 1 hour travelling.
Full day
Cost per visit = £304</td><td>0.67 (general rate for litter removal on whole site)</td></tr>
<tr><td>Inspect control structures to/from filter canals, rills or treatment channels</td><td>1 per month</td><td>Surface control structures can be slot weirs, V-notch or gabion baskets with control in the stone fill. They can be inspected without removing covers or special keys
Maintenance of control structures in manhole chambers will be more expensive.</td><td>£5/ structure</td></tr>
<tr><td>Remove silt.

Remove silt from site</td><td>1 per 5 years</td><td>Silt accumulation is slow if canal is protected by source control feature
Only required once every 5 years</td><td colspan="2">Assume 1 site visit with 3 men, 1 light van and ancillary equipment. canal up to 100m length
Cost per visit = £485
Disposal of silt by truck with mechanical grab (assuming it is not hazardous or special waste) £55/m^3</td></tr>
</table>

= SUDS Specific Items

Canals and Rills

General rates - cost per visit to site **10000 m2 site**

No per year	Item	No	Unit	Rate	Total per visit for site inc all SUDS	Page reference in SPON'S
					10000 m2 site	
12	Litter removal	10000	100m2	0.67	67	Pg 216 collection and disposal of litter from isolated grassed area assume rill is maintained as part of wider management of area
12	Inspect control structures to swale (assumes surface features and no special tools required)	4	No	5	20	Allow £5 per structure
1	Scrub clearance and vegetation management in canals and rills	10000	100m2	5.83	583	Page 216 use rate for clearing leaf and other debris from verges by hand
1	Removal of all arisings (scrub clearance and vegetation)	3300	100m2	2.65	87.45	Page 216 use rate for removal of arisings from areas containing shrub beds.
	Total per visit if all items completed				**757.45**	
	Total per visit for litter removal, inspection and gress cutting				**87**	
	Total annual cost				**1714.45**	
	Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow 15%				**257.1675**	

Cost per visit based on labour rates

Item	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 2	8	hour	15.5	124.00	248.00	Page 8 includes overheads, tools, site kit, etc but not profit. Assume that if visit is specifically to maintain canals or rills then a gang of 2 men will be used.
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Ancillary tools and equipment	1	day	20	10.00	20.00	Allowance for tools such as strimmers, etc
Disposal of cuttings off site	1	Item	150	150.00	150.00	Cost based on small skip specific for disposal from a particular site - 6m^3 (The more sites that are maintained the less this cost may become)
Total per visit				**152.00**	**304.00**	
Total for 12 visits per year				**1824.00**	**3648.00**	
Contingency to allow for ad hoc work such as repairing erosion, vandalism, etc. Allow one extra visit per year				**152.00**	**304.00**	

Silt removal by hand every 5 years

Assume a specific visit is made for this work	No	Unit	Rate	Half day (4 hours)	Full day (8 hours)	Page reference in SPON'S
Labourers x 2	8	hour	15.5	124.00	248.00	Page 8 includes overheads, tools, site kit, etc but not profit
Light van (eg transit)	1	day	36	18.00	36.00	Page 8 includes fuel, insurance, etc
Ancillary tools and equipment to scarify and spike	1	day	40	20.00	40.00	Allowance for tools such as strimmers, pedestrian operated scarifying equipment, etc
Disposal of silt from SUDS serving 1Ha catchment (volume depends on catchment area)	0.63	m^3	51.18	161.00	161.00	Allow 0.63m^3 per year per ha of catchment area (impermeable), based on 755kg/ha/yr and density of 1200kg/m^3 from Darcy et al (2000). Cost from Page 106, wet clay
Total				**323.00**	**485.00**	

Notes
All rates and base costs taken from SPON'S External Works and Landscape Price Book 2008

Silt loading

Parameter	Units	Value	
Silt load (TSS)	kg/ha/yr	755	Maximum load for high density housing
Silt density in pond	kg/m^3	1200	
Silt accumulation pond	m^3/y/ha impermeable catchment area	0.63	

APPENDIX VII – PRE APPLICATION CHECK LIST

Requirements	Details (or ref documentation)	Agreed?
(a) Any planning and environmental objectives for the site that should influence the surface water drainage strategy. These objectives can be put forward by the developer, LPA or relevant flood risk management authorities and should be agreed by all parties.		
(b) The likely environmental or technical constraints to SuDS design for the site. These should be agreed by all parties."		
(c)The requirements of the local adoption or ongoing maintenance arrangements. The LPA have the overriding decision on the appropriateness of the adoption arrangements."		
(d) The suite of design criteria to be applied to the SuDS scheme (taking account of (a) to (c))."		
(e) Evidence that the initial development design proposals have considered the integration and linkage of the surface water management with street layouts, architectural and landscape proposals."		
(f) An assessment of strategic opportunities for the surface water management system to deliver multiple benefits for the site (see Table 5, British Standard 8582). This should be provided by the developer and should include the strategic use of public open space for SuDS."		
(g) The statutory and recommended non-statutory consultees for the site. This should be provided by the LPA."		
(h) The likely land and infrastructure ownership for drainage routes and points of discharge (including sewerage assets)."		
(i) An assessment of statutory consultee responsibilities and requirements, including timescales for any likely required approvals/consents."		
(j) Any potential local community impacts, health and safety issues or specific local community concerns/requirements that should be addressed by the detailed design."		
(k) An assessment of cost implications of stakeholder obligations."		
(l) An agreed approach to the design and maintenance of the surface water management for the proposed site.		

Surface water drainage pro-forma for new developments

We advise that developers should complete this form and submit it to the Local Planning Authority, referencing from where in their submission documents this information is taken. The pro-forma should be considered alongside other supporting SuDS guidance, but focuses on ensuring flood risk is not made worse elsewhere.

Pre-app	Outline	Full	Reserved	Discharge	Document submitted
✓	✓	✓			Flood Risk Assessment/Statement (checklist)
✓	✓	✓			Drainage Strategy/Statement & sketch layout plan (checklist)
	✓				Preliminary layout drawings
	✓				Preliminary "Outline" hydraulic calculations
	✓				Preliminary landscape proposals
	✓				Ground investigation report (for infiltration)
	✓	✓			Evidence of third party agreement for discharge to their system (in principle/ consent to discharge)
		✓		✓	Maintenance program and on-going maintenance responsibilities
		✓	✓		Detailed development layout
		✓	✓	✓	Detailed flood & drainage design drawings
		✓	✓	✓	Full Structural, hydraulic & ground investigations
		✓	✓	✓	Geotechnical factual and interpretive reports, including infiltration results
		✓	✓	✓	Detailed landscaping details
		✓	✓	✓	Discharge agreements (temporary and permanent)
		✓	✓	✓	Development Management & Construction Phasing Plan

The table on the right indicates the level of information which would need to be submitted for each type of application or stage within the planning process will vary depending on the size of the development, flood risk, constraints, proposed sustainable drainage system etc.

Additional information may be required under specific site conditions or development proposals.

1. Site Details

Site	
Address & post code or LPA reference	
Grid reference	
Is the existing site developed or Greenfield?	
Total Site Area served by drainage system (excluding open space) (Ha)*	

* The Greenfield runoff off rate from the development which is to be used for assessing the requirements for limiting discharge flow rates and attenuation storage from a site should be calculated for the area that forms the drainage network for the site whatever size of site and type of drainage technique. Please refer to the Rainfall Runoff Management document or CIRIA manual for detail on this.

2. Impermeable Area

	Existing	Proposed	Difference (Proposed-Existing)	Notes for developers & Local Authorities
Impermeable area (ha)				
Drainage Method (infiltration/sewer/watercourse)			N/A	If different from the existing, please fill in section 3. If existing drainage is by infiltration and the proposed is not, discharge volumes may increase. Section 6 must be filled in

3. Proposing to Discharge Surface Water via

	Yes	No	Evidence that this is possible	Notes for developers & Local Authorities
Infiltration				e.g. soakage tests. Section 6 (infiltration) must be filled in if infiltration is proposed.
To watercourse				e.g. Is there a watercourse nearby?
To surface water sewer				Confirmation from sewer provider that sufficient capacity exists for this connection.
Combination of above				e.g. part infiltration part discharge to sewer or watercourse. Provide evidence above.

4. Peak Discharge Rates – This is the maximum flow rate at which storm water runoff leaves the site during a particular storm event.

	Existing Rates (l/s)	Post development Rates (l/s)	Difference (l/s) (Post-Existing)	Notes for developers & Local Authorities
Greenfield QBAR		N/A	N/A	QBAR is approx. 1 in 2 storm event. Provide this if Section 6 (QBAR) is proposed.
1 in 1				Proposed discharge rates (with mitigation) should be no greater than **1 in 1** annual probability for all corresponding storm events. e.g. discharging all flow from site at the existing 1 in 100 event increases flood risk during smaller events.
1 in 30				
1in 100				
1 in 100 plus climate change	N/A			To mitigate for climate change the proposed 1 in 100 +CC must be no greater than the existing 1 in 1 runoff rate. If not, flood risk increases for small scale return periods and under climate change. **70%** should be added to the peak rainfall intensity.

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5. Calculate additional volumes for storage –The total volume of water leaving the development site. New hard surfaces potentially restrict the amount of stormwater that can go to the ground, so this needs to be controlled so not to make flood risk worse to properties downstream.

	Existing Volume (m^3)	Post development Volume (m^3)	Difference (m^3) (Proposed-Existing)	Notes for developers & Local Authorities
1 in 1				Proposed discharge volumes (without mitigation) should be no greater than existing volumes for the existing **1 in 1** annual probability storm event. Any increase in volume increases flood risk elsewhere. Where volumes are increased section 6 must be filled in.
1 in 30				
1in 100				
1 in 100 plus climate change				To mitigate for climate change the volume discharge from site must be no greater than the existing 1 in 1 storm event. If not, flood risk increases under climate change.

6. Calculate attenuation storage – Attenuation storage is provided to enable the rate of runoff from the site into the receiving watercourse to be limited to the acceptable rate to protect against erosion and flooding downstream. The attenuation storage volume is a function of the degree of development relative to the greenfield discharge rate.

		Notes for developers & Local Authorities
Storage Attenuation volume (Flow rate control) required to retain rates as existing (m^3)		Volume of water to attenuate on site if discharging at existing **1 in 1** annual probability rates.

7. How is Storm Water stored on site?

Storage is required for the additional volume from site but also for holding back water to slow down the rate from the site. This is known as attenuation storage and long term storage. The idea is that the additional volume does not get into the watercourses, or if it does it is at an exceptionally low rate. You can either infiltrate the stored water back to ground, or if this isn't possible hold it back with on-site storage. Firstly, can infiltration work on site?

			Notes for developers & Local Authorities
Infiltration	**State the Site's Geology and known Source Protection Zones (SPZ)**		Avoid infiltrating in made ground. Infiltration rates are highly variable and refer to Environment Agency website to identify and source protection zones (SPZ)
	Are infiltration rates suitable?		Permeability tests (BRE 365) must be taken at the depth and location of significant infiltration features. Infiltration rates should be no lower than 1x10 -6 m/s.
	State the distance between a proposed infiltration device base and the ground water (GW) level		Need 1m (min) between the base of the infiltration device & the water table to protect Groundwater quality & ensure GW doesn't enter infiltration devices. Avoid infiltration where this isn't possible.

	Is the site contaminated? If yes, consider advice from others on whether infiltration can happen.		Water should not be infiltrated through land that is contaminated. The Environment Agency may provide bespoke advice in planning consultations for contaminated sites that should be considered.
	Yes/No? If the answer is No, please identify how the storm water will be stored prior to release		If infiltration is not feasible how will the additional volume be stored?. The applicant should then consider the following options in the next section.
In light of the above , is infiltration feasible?			

Storage requirements

The developer must confirm that either of the two methods for dealing with the amount of water that needs to be stored on site.

Option 1 Simple – Store both the additional volume and attenuation volume in order to make a final discharge from site at a **1 in 1** annual probability rate. This is preferred if no infiltration can be made on site. This very simply satisfies the runoff rates and volume criteria.

Option 2 Complex – If some of the additional volume of water can be infiltrated back into the ground, the remainder can be discharged at a **1 in 1** annual probability rate. A combined storage calculation using the partial infiltration values and the allowed runoff rate needs to be supplied.

		Notes for developers & Local Authorities
Please confirm what option has been chosen and how much storage is required on site.		The developer at this stage should have an idea of the site characteristics and be able to explain what the storage requirements are on site and how it will be achieved.

8. Please confirm

		Notes for developers & Local Authorities
Which Drainage Systems measures have been used?		SuDS can be adapted for most situations even where infiltration isn't feasible e.g. impermeable liners beneath some SuDS devices allows treatment but not infiltration. See CIRIA SuDS Manual C753.
Drainage system can contain in the 1 in 30 storm event without flooding		This is a requirement for sewers for adoption & is good practice even where drainage system is not adopted.
Any flooding between the 1 in 30 & 1 in 100 plus climate change storm events will be safely contained on site.		**Safely:** not causing property flooding or posing a hazard to site users i.e. no deeper than 100mm on roads/footpaths. Flood waters must drain away at section 6 rates.
How are rates being restricted (hydrobrake etc.)		Hydrobrakes can be used where rates are > 2l/s. Orifices can be used below 5l/s - sufficient anti-siltation measures must be applied.
Please confirm the owners/adopters of the entire drainage systems throughout the development. Please list all the owners.		If there are multiple owners then a drawing illustrating exactly what features will be within each owner's remit must be submitted with this Pro-forma.
How is the entire drainage system to be maintained?		If the features are to be maintained directly by the owners as stated in answer to the above question please answer yes to this question and submit the relevant maintenance schedule for each owner. If it is to be maintained by others than above please give details of each feature and the maintenance schedule. Clear details of the maintenance proposals of all element of the proposed drainage system must be provided. Poorly maintained drainage can lead to increased flooding problems in the future.

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10. Evidence Please identify where the details quoted in the sections above were taken from. i.e. Plans, reports etc. Please also provide relevant drawings that need to accompany your pro-forma, in particular exceedance routes and ownership and location of SuDS maintenance access strips etc.

Pro-forma Section	Document reference where details quoted above are taken from	Page Number
Section 2		
Section 3		
Section 4		
Section 5		
Section 6		

Section 7		

The above form should be completed using evidence from the Flood Risk Assessment and site plans. It should serve as a summary sheet of the drainage proposals and should clearly show that the proposed rate and volume as a result of development will not be increasing and are restricted to the allowed values. If there is an increase in rate or volume due to development, the rate or volume section should be completed to set out how the additional rate/volume is being dealt with.

This form is completed using factual information from the Flood Risk Assessment and Site Plans and can be used as a summary of the surface water drainage strategy on this site.

Form Completed By…….....
Qualification of person responsible for signing off this pro-forma.....

Company……,.....
On behalf of (Client's details).....
Date.....

TEWKESBURY BOROUGH COUNCIL

Report to:	Planning Committee
Date of Meeting:	26 September 2017
Subject:	Current Appeals and Appeal Decisions Update
Report of:	Paul Skelton, Development Manager
Corporate Lead:	Robert Weaver, Deputy Chief Executive
Lead Member:	Lead Member for Built Environment
Number of Appendices:	One

Executive Summary:

To inform Members of current Planning and Enforcement Appeals and of Communities and Local Government (CLG) Appeal Decisions issued.

Recommendation:

To CONSIDER the report.

Reasons for Recommendation:

To inform Members of recent appeal decisions.

Resource Implications:

None.

Legal Implications:

None.

Risk Management Implications:

None.

Performance Management Follow-up:

None.

Environmental Implications:

None.

1.0 INTRODUCTION/BACKGROUND

1.1 At each Planning Committee meeting, Members are informed of current Planning and Enforcement Appeals and of Communities and Local Government (CLG) Appeal Decisions that have recently been issued.

2.0 APPEAL DECISIONS

2.1 The following decisions have been issued by the First Secretary of State of CLG:

Application No	16/00907/FUL
Location	Bushcombe House Farm Bushcombe Lane Woodmancote Cheltenham GL52 9QL
Appellant	Mr P Badham
Development	Siting of a single log cabin holiday let unit
Officer recommendation	Refuse
Decision Type	Delegated
DCLG Decision	Dismissed
Reason	The application had been refused as it conflicted with the Council's policy TOR2 which does not support new build holiday lets, and due to the harm to the AONB. The Inspector agreed that the visibility requirements for the site would result in a large amount of vegetation on the site's frontage needing to be removed this would harm the character and appearance of the AONB. Additionally the removal of the vegetation would result in the enclosed rural site becoming much more open and the likely domestic accoutrements would adversely affect the character and appearance of the AONB. For these reasons the proposed development would conflict with the Framework and statutory legislation relating to protected landscapes.
Date	18.08.2017

Application No	16/01435/FUL
Location	Foscombe House Foscombe Ashleworth Glos GL19 4JN
Appellant	Mr Mark Martin
Development	Erection of a woodstore to the north of Foscombe House
Officer recommendation	Refuse
Decision Type	Delegated
DCLG Decision	Dismissed
Reason	The application had been refused on landscape impact grounds (conflict with LP Policy LND4) and impact on setting of a Grade II* Listed building. The Inspector noted that the proposed scheme had not addressed a previous Inspector's concerns in dismissing a previous appeal on the site. He concluded that the countryside setting was a part of the significance of the heritage asset, and the erection of a wood-store in its proposed location would be harmful to both setting of the Grade II* Listed Building and countryside.
Date	05.09.2017

Application No	17/00028/FUL
Location	Chapel Farm Walton Cardiff Lane Tewkesbury GL20 7BL
Appellant	Mr Joseph Muscat
Development	Change of Use of land from agricultural use to domestic use, provision of vehicular driveway and alterations to vehicular access and associated landscaping and boundary treatments.
Officer recommendation	REFUSE
Decision Type	Delegated
DCLG Decision	DISMISSED and COSTS REFUSED
Reason	The application had been refused due to the impact the proposed development would have on the character and appearance on the rural landscape. The Inspector agreed that the proposal would result in an adverse cumulative visual harm to the existing agricultural field. Whilst there was an existing access gate the introduction of a domestic metalled driveway which would travel a significant distance across an open field currently used for crops would be unsympathetic to the character and appearance of the landscape. Furthermore, the proposal would be visible from the road to the east and other public vantage points and an engineered driveway with paddocks would be unsympathetic and detrimental to the countryside. Costs Application The Appellant suggested that the Council failed to provide detailed evidence for the refusal reasons. The Inspector highlighted the details within the delegated officer report which assess the proposal and consider the reason for refusal was sufficiently clear and precise. Additionally, the Inspector agreed that for the scale of the proposal it was appropriate for the planning officer to use their judgement relating to landscape despite the evidence provided by the appellant's landscape expert. Overall, the Inspector did not consider that the applicant was put to unnecessary or wasted expense.
Date	08.09.2017

3.0 ENFORCEMENT APPEAL DECISIONS

3.1 None received.

4.0 OTHER OPTIONS CONSIDERED

4.1 None.

5.0 CONSULTATION

5.1 None.

6.0 RELEVANT COUNCIL POLICIES/STRATEGIES

6.1 None.

7.0 RELEVANT GOVERNMENT POLICIES

7.1 None.

8.0 RESOURCE IMPLICATIONS (Human/Property)

8.1 None.

9.0 SUSTAINABILITY IMPLICATIONS (Social/Community Safety/Cultural/ Economic/ Environment)

9.1 None.

10.0 IMPACT UPON (Value For Money/Equalities/E-Government/Human Rights/Health And Safety)

10.1 None.

11.0 RELATED DECISIONS AND ANY OTHER RELEVANT FACTS

11.1 None.

Background Papers: None.

Contact Officer: Jane Bagley, Appeals Administrator Tel: 01684 272286
Email: Jane.Bagley@tewkesbury.gov.uk

Appendices: 1 - List of Appeals Received.

Appendix 1

List of Appeals Received						
Reference	**Address**	**Description**	**Date Appeal Lodged**	**Appeal Procedure**	**Appeal Officer**	**Statement Due**
16/01155/OUT	Land Adjoining The Timberyard Two Mile Lane Highnam Gloucester Gloucestershire GL2 8DW	Outline planning application for the erection of a single dwelling and associated access.	01/09/2017	W	MAD	06/10/2017
17/00277/FUL	4 Orchard Way Churchdown Gloucester Gloucestershire GL3 2AN	First floor rear extension	18/08/2017	H	SNB	

Process Type

- **FAS** indicates FastTrack Household Appeal Service
- **HH** indicates Householder Appeal
- **W** indicates Written Reps
- **H** indicates Informal Hearing
- **I** indicates Public Inquiry