

Environment Agency

**CREATING A BETTER PLACE:
PLANNING FOR WATER QUALITY AND GROWTH IN
THE SOUTH EAST**

Version 10.4

Water Quality and Growth in the South East

1.0 Introduction

- 1.1 Good water quality is essential for the people, businesses and wildlife in the South East. Our rivers and groundwater are used for public drinking water supply. Good quality water is also essential to maintain fisheries, recreation, navigation and biodiversity. It is fundamental to sustainable development, health and quality of life in the South East.
- 1.2 This report assesses the distribution of houses in the South East Plan to ensure we improve and protect our water environment. Housing development needs to be in the right place and supported by the right infrastructure otherwise it will cause harm to water quality, wildlife, drinking water and recreational uses.
- 1.3 The Environment Agency has been working with SEERA and the water companies (Thames Water and Southern Water) to identify locations where there is a risk that the sewage treatment works will be unable to treat the sewage from the proposed new housing to the standards required to protect water quality. Computer models have been used to predict the effects of the extra housing on river water quality.
- 1.4 Our studies have assessed the chemical effects of the increase in sewage effluent. Further studies may need to assess the impact on river ecology that could arise from significant increases in volumes of sewage effluent at a few locations and further investigative work is planned. Early indications do not suggest any river flooding problems will be caused by the proposed increases in sewage effluent flows.
- 1.5 This analysis assumes that the sewage from new housing is accommodated through expansion or upgrade of existing sewage treatment works (STWs). As part of the planning process, other solutions, such as local treatment or discharging sewage effluent at different locations, need to be fully investigated in future work.
- 1.6 Increased urbanisation will bring with it additional effects on water quality, such as diffuse pollution from road run-off. This report has not considered this impact. However, it is assumed that general pollution prevention policies contained within the South East Plan, such as those relating to sustainable drainage systems (SUDS), will help to address these impacts.

2.0 Assessment

- 2.1 We developed screening criteria to identify the sewage treatment works most vulnerable to housing development. This was based on the stringency of the standards required in STW discharge consents¹, which is an indicator of limited dilution and/or a sensitive watercourse. This screening identified 63 STWs for further study out of a total 523 STWs within the SE Plan boundary.
- 2.2 Computer models were then built for the locations identified for further study by the screening exercise. These were used to examine the impact of the projected housing growth to 2026. Where available, we used location specific housing numbers derived included in Policy H1 and the sub-regional strategies in the draft South East Plan. Where these were not available, we used the standard growth rate proposed by the South East Plan i.e. 28900 per annum across the region.
- 2.3 We also calculated how many additional houses² could be connected to each prioritised sewage treatment works without requiring effluent standards that can not be achieved using currently established technology. We assessed the following parameters as being indicative of the 'load' on the environment: biological oxygen demand (BOD), ammonia, nitrogen and phosphorus.

3.0 Results

- 3.1 Table 1 shows the locations where growth projected to 2026 can be accommodated, but stricter discharge consents will be required to protect water quality. Upgrades to the sewage treatment facilities will be needed to meet these tighter standards. The water companies have provided estimated costs. However, some of these will include an element of environmental improvement where work is also needed to improve already unsatisfactory rivers. It has not been possible at this stage to separate the costs of this environmental improvement from those attributable solely to growth. Costs quoted are capital expenditure only. In addition to these costs of STW improvements, there may be additional capital costs for upgrading sewers and additional costs for operating enhanced treatment facilities.

¹ The Environment Agency issues a discharge consent for all discharges of sewage to controlled waters.

² The number of additional houses was calculated from additional flow by assuming average house occupancy of 2.5 people and a population equivalent flow of 200 litres per person per day (which includes an allowance for unaccounted flow).

Table 1: Locations where growth projected to 2026 can be accommodated with stricter discharge consents.

Sewage treatment works name	Capital costs for wastewater treatment
Arborfield	L
Ascot	L
Ashford	L
Aylesbury	*
Banbury	*
Beddington	L
Bicester	*
Bracknell	L
Canterbury	L
Chertsey	L
Crawley	*
Eastry	M
Felbridge	L
Fleet	L
Guildford	L
Hartley Wintney	M
Herne Bay	L
Hockford:Pirbright	L
Leatherhead	L
Lenham	M
Long Crendon	*
Maidenhead	L
Maple Lodge	*
Oxford	L
Scaynes Hill	L
Slough	L
Tangmere	M
Wargrave	L
White Waltham	M
Wisley	L

Costs assessed in bands as follows:

£k/ additional housing unit

H = >10

M = 5 – 10

L = < 5

* = information not currently available.

Information for Ashford has been derived from a more detailed separate study.

- 3.3 Table 2 lists sites where, using this assessment, we recommend a limit to be imposed on housing beyond that already connected. (These sites are shaded amber on the attached map).

Table 2: Locations where a limit should be placed on additional housing

Sewage treatment works name	Allowable number of additional houses *
Brockenhurst	1110
Charing	5070
Chickenhall	4000
Chilbolton	7060
Dambridge	2160
Eden Vale	10130
Guestling	110
Hailsham North	2960
Hailsham South	2460
Harestock	6260
Hogsmill Valley	3520
Horsham	3760
Hungerford	3880
Kings Somborne	3980
Kintbury	2120
Newbury	2680
Pagham	620
Playden & Iden	3560
Pulborough	640
Reading	37430
Romsey Greenhill	5770
Sidlesham	1420
Stockbridge	7860
Tenterden	3060

Note

Where the number of additional houses in the district allocation (derived using Policy H1 from the draft SE Plan) exceeded the “allowable number of additional houses” for a sewage treatment works (STW) within that district the STW has been listed in Table 2. The following assumptions have been made for this purpose: The number of additional houses was calculated from additional flow by assuming average house occupancy of 2.5 people and a population equivalent flow of 200 litres per person per day (which includes an allowance for unaccounted flow). Where more than one district may contribute to a STW catchment, we have used the sum of the said district allocations. Where there is more than one STW within a district, we have assumed that the whole of the district allocation would go to each of the works.

- 3.4 The selection of locations mentioned in this report was based on the current proposals of the draft South East Plan. If house numbers and distribution should change significantly, the findings of this study will need to be re-visited.

4.0 Recommendations

The following recommendations assume that the sewage treatment takes place in the existing locations, discharging to the same rivers as they do now. However, it may be possible to look at local options for treatment or relocating the discharge points to less sensitive rivers in some cases.

- 4.1 A limit on housing growth connected to the existing sewage works should be placed on those locations listed in Table 2.
- 4.2 When allocating housing targets, due consideration should also be given to the costs shown in Table 1.
- 4.3 In all cases, adequate sewage collection and treatment facilities must be provided before new houses are built.

5.0 Further Work

- 5.1 During assessment of sewage treatment works discharging to the River Blackwater catchment, we have encountered problems related to unidentified ammonia sources. We therefore need to carry out further study on the following works:

- Aldershot Town
- Aldershot Military
- Ash Vale
- Sandhurst
- Camberley
- Eversley Cross
- Eversley (Lower Common)

- 5.2 Further work is also required to verify current flow figures for Maple Lodge.
- 5.3 The assessment has shown that the current discharge location of Fullerton STW is contributing to non-compliance of the phosphorus standard in the River Test, and that this problem will not be resolved despite BAT Phosphorus treatment being installed at the works by March 2009. However in addition to BAT phosphorus treatment the previous AMP4 decision also permits an increase in flow to discharge at this location. To prevent further deterioration of the water quality in the River Test, the Environment Agency, Southern Water and the Test Valley Borough Council need to work together to a shared solution.
- 5.4 Previous consideration of housing development at Basingstoke indicated that the growth in the existing Local Development Plan could be accommodated to 2011. The present study has revealed a new concern about phosphorus concentrations downstream of Basingstoke. Further, more detailed, work is now needed to assess:

- i) the impacts of housing growth to 2011 on a nature conservation site downstream; and
 - ii) the impacts of additional housing growth proposed in the South East Plan.
- 5.5 It is recommended that this work should form part of an integrated water cycle study already proposed (see below).
- 5.6 Integrated water cycle studies involving detailed investigation of all water management issues are proposed at the following locations:
- Aylesbury (funding secured)
Basingstoke (partial funding secured)
Crawley (partial funding secured)
- 5.7 For catchments where the allowable number of additional houses is likely to be less than the projected growth we propose further work, where requested, as follows:
- i) Identify possible alternative treatment options and/or discharge locations
 - ii) For feasible options determine cost of treatment and sewerage.
- 5.8 It is anticipated that the results of the studies for Aylesbury and Basingstoke will be available in time for the EiP. The study for Crawley, however, is unlikely to be completed in time. The results for further studies underway in the Blackwater Valley and Maple Lodge, are expected to be available before the EiP.

6 Important notes

- 6.1 The information and data contained in this report are without prejudice to the full determination of consent conditions in response to any future applications for consent to discharge.
- 6.2 Cost bands have been provided for indicative purposes only (see Table 1). They have been prepared using broad assumptions without reference to site specific factors such as land availability and power supply.
- 6.3 This study has not covered any requirements for additional or upgraded sewer networks. The scale of these is dependent on the precise location and magnitude of new development; information that is not currently available.
- 6.4 Constraints on connecting houses to sewage works discharging to groundwater could possibly be required in future years as a result of investigations related to regulations under the EC Groundwater Directive and the EC Water Framework Directive.

*Environment Agency
22nd May 2006*

Annex 1

Proportioning factors for higher growth scenario of 40,000 houses p.a.

1. The numbers of additional houses being proposed in the main report have been derived from Policy H1 and the sub-regional strategies in the draft South East Plan. These housing numbers were based on an annual average of 28,900 net additional dwellings between 2006 and 2026. Therefore to assess the impact of the higher annual average of 40,000 net additional houses the district allocations have been increased pro rata except for designated growth areas.

Growth areas

2. Ashford, the Thames Gateway and Milton Keynes / South Midlands have been designated as growth areas by the Office of the Deputy Prime Minister.
3. Growth area allocations to Local Authority Districts are not assumed to increase in the 40,000 households p.a. scenario. Therefore districts boundaries considered to be within growth areas such as Ashford, Dartford, Gravesham, Medway, Swale and Milton Keynes have the same household allocation in both the 28,900 p.a. and 40,000 p.a. housing growth scenarios examined.

Results

4. Using the 40,000 p.a. scenario an additional two sites have been identified as having constraints on number of additional houses that can be connected to the STW.
5. Additional locations to those identified in Table 2 where a limit should be placed on additional housing due to the 40,000 p.a. growth scenario.

Sewage treatment works name	Allowable number of additional houses
Lenham	9000
Tangmere	11000

6. However at both STWs the allowable number of additional houses is only marginally below the total allocation to the Local Authority District. As such it could be considered unlikely that such an overwhelming majority of the Local Authority District allocation would be connected to either works.

Conclusion

At the higher growth rate of 40,000p.a. only two additional locations (to the 25 already identified) have been identified as presenting a constraint on housing growth. This should not be interpreted as the higher growth rate making only a marginal difference to the outcome of this analysis.

We are currently assessing which Sewage Treatment Works catchments may reach their growth limits (as defined in Table 2) by 2025 at a build rate of 28,900 p.a. At a growth rate of 40,000 p.a. it is likely that:

- 1) growth will exceed capacity at a greater number of STW catchments; and
- 2) the constraint will be reached earlier.