Water Quality Assessment Update

Reading Borough Council

On behalf of

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For and on behalf of Stantec UK Limited				

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Abbreviations

AMP	Asset Management Period
BOD	Biochemical Oxygen Demand
CAR	Compliance Assessment Report
DWF	Dry Weather Flow
DWMP	Drainage and Wastewater Management Plan
EA	Environment Agency
EDM	Event Duration Monitoring
EQM	Environmental Quality Standards
FCERM	Flood and Coastal Erosion Risk Management
FFT	Flow to Full Treatment
GIS	Geographic Information System
ICP	Inductively Coupled Plasma
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority
NPPF	National Planning Policy Framework
ONS	Office for National Statistics
PE	Population Equivalent
PFF	Pass Forward Flow
PFRA	Preliminary Flood Risk Assessment
PPG	Planning Practice Guidance
RAG	Red-Amber-Green
RBC	Reading Borough Council
RBMP	River Basin Management Plan
RNAG	Reasons for Not Achieving Good
SFRA	Strategic Flood Risk Assessment
SS	Suspended Solids
STW	Sewage Treatment Works

SuDS	Sustainable Drainage Systems
TDV	Total Daily Volume
TWUL	Thames Water Utilities Limited
WCS	Water Cycle Study
WFD	Water Framework Directive
WINEP	Water Industry National Environment Programme
WQA	Water Quality Assessment

1 Introduction

1.1 Background

1.1.1 The Water Quality Assessment Update report has been prepared by Stantec, on behalf of Reading Borough Council (RBC), to support the Council's 'Local Plan Partial Update' – and therefore to update the existing Water Quality Assessment – which was prepared in 2018 by Peter Brett Associates (PBA, now Stantec).

1.1.2 The existing Local Plan was adopted in November 2019 and RBC is now carrying out this Partial Update to ensure that key parts of the plan are as up to date as possible. The Partial Update will also help RBC achieve the development that best meets their needs.

1.2 Report Scope

1.2.1 The proposed increase in homes in the Reading Borough area will result in a corresponding increase in the volume of wastewater generated by residential development. It is therefore necessary to consider the infrastructure capacity to treat the wastewater as well as the impact on the receiving water bodies to accommodate the additional treated wastewater generated from the proposed developments.

1.2.2 The report will also assist in demonstrating that the Partial Update of the Local Plan is deliverable and compliant with the National Planning Policy Framework (NPPF) and the Water Framework Directive (WFD) and its objectives.

1.2.3 This Water Quality Assessment (WQA) Update will:

- Review the relevant planning policy and the WFD;
- Detail the Local Plan delivery and the proposed growth within the Borough;
- Review the wastewater infrastructure in the area;
- Consider the Environmental Capacity of the receiving water bodies; and
- Provide a summary of the findings.

1.3 Report Structure

1.3.1 The report is set out as follows:

- **Section 2** considers the planning policy and the WFD,
- **Section 3** details the proposed growth in the Borough,
- **Section 4** reviews the wastewater infrastructure capacity in the area and any relevant upgrades,
- **Section 5** reviews the environmental capacity of the receiving water bodies,
- **Section 6** provides the major developments site assessment, and,
- **Section 7** provides a summary of the report.

1.4 Caveats and Exclusions

1.4.1 The assessment will consider wastewater only, as surface water is taken into consideration within other Reading Borough reports which include:

- The Preliminary Flood Risk Assessment (PFRA), dated June 2011,
- The Local Flood Risk Management Strategy (LFRMS), dated October 2015,
- The Level 1 Strategic Flood Risk Assessment (SFRA), dated November 2024, and;
- The Level 2 SFRA, dated December 2017.

1.4.2 Consequently, climate change is also excluded from this report (as this impacts specifically on surface water arising from increased rainfall intensity or peak river flow).

1.4.3 Stantec's liaison and information gathering exercise covers the Reading Borough area only and does not take into account any impact from its neighbouring authorities.

2 Planning Policy Context

2.1 Introduction

2.1.1 Development opportunities within Reading Borough must comply with legislation, policy and guidance at the national, regional and local level. Ultimately there is a compendium of authorities and organisations with an interest in the proposals and - before development options can be approved - they must first be shown to be compliant with relevant legislation.

2.1.2 Below is a list of policy and legislation that influences this WQA Update for the Borough.

2.2 Water Framework Directive (WFD)

2.2.1 The WFD[1] was transposed into law in England and Wales by the Water Environment Regulations 2003. These Regulations implement a holistic approach to the management, protection and monitoring of the water environment. The aim of the WFD is to prevent further deterioration in water resources (volume and quality); protect and enhance the status of aquatic ecosystems and associated wetlands; promote sustainable water consumption; and contribute to mitigating the effects of floods and droughts.

2.2.2 The WFD has been supplemented by subsequent EU legislation concerning the protection of groundwater against pollution and deterioration (The Groundwater Directive, 2006), the specification of environmental quality standards (The Priority Substances Directive,2008), and the chemical analysis and monitoring of water status (2009).

2.2.3 The key objectives of the WFD are to prevent deterioration in the status of water bodies and aim to achieve good ecological and chemical status/potential (including quantitative status in groundwater bodies) by 2027. Water bodies must also comply with the standards and objectives of protected areas (i.e. areas designated under another European Directive, such as Special Areas of Conservation or Special Protection Areas), where these apply. In addition, discharges, emissions and losses of priority substances to surface water bodies must be progressively reduced and emissions of priority hazardous substances prevented. Finally, action must be taken to reverse any identified sustained upward trend in pollution concentrations in groundwater bodies.

2.2.4 The framework for delivering the Directive is through River Basin Management Planning. The Thames River Basin District River Basin Management Plan (RBMP), 2022 update is the applicable management plan for the area.

2.2.5 The Environment Agency (EA) publish the status and objectives of each surface water body on the Catchment Data Explorer[2] detailing the status of each water body.

2.3 National Planning Policy Framework (NPPF)

2.3.1 The NPPF[3] was revised in December 2024 and updated in February 2025, issued by the Ministry of Housing, Communities and Local Government, and sets out the government's planning policies for England and how these are expected to be applied. A fundamental principle of the NPPF is that the interpretation of the policy is to lead to sustainable development, which is defined as achieving a balance between economic, social and environmental benefits.

2.3.2 The NPPF sets of the requirements for Strategic Policies in paragraph 20 – see below.

[1] https://environment.ec.europa.eu/topics/water/water-framework-directive_en

[2] https://environment.data.gov.uk/catchment-planning

[3] National Planning Policy Framework - GOV.UK

> *"**20.** Strategic policies should set out an overall strategy for the pattern, scale and design quality of places, and make sufficient provision for:*
>
> *a) housing (including affordable housing), employment, retail, leisure and other commercial development;*
>
> *b) infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);*
>
> *c) community facilities (such as health, education and cultural infrastructure); and*
>
> *d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.*

2.3.3 The NPPF sets out the requirement for planning for climate change in paragraph 162 – see below

> *"**162.** Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure."*

2.3.4 The NPPF sets out the requirement for conserving and enhancing the natural and local environment in paragraph 187 – see below:

> *"**187.** Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *(a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
>
> *(b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
>
> *c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
>
> *(d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs;*
>
> *(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
>
> *(f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate*.

2.4 Planning Guidance for Water Supply, Wastewater and Water Quality

2.4.1 The guidance, from the Ministry of Housing, Communities & Local Government, was last updated in July 2019[4]. The guidance provides an overview of the water supply, wastewater and water quality concerns that Local Plans may need to address.

2.4.2 The planning for wastewater infrastructure considerations is detailed in paragraph 005 of the guidance – see below.

[4] https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality

> ***"Planning for water infrastructure*** *- Plan-making may need to consider:*
>
> - *identifying suitable sites for new or enhanced wastewater and water supply infrastructure. When identifying sites it is important to recognise that water and wastewater infrastructure can have specific locational needs (and often consists of engineering works rather than new buildings). This means exceptionally otherwise protected areas may have to be considered, where this is consistent with their designation.*
> - *existing and proposed development in the vicinity of a location under consideration for water and wastewater infrastructure. In two-tier areas there will need to be close working between the district and county councils.*
> - *whether new development is appropriate near to sites used (or proposed) for water and wastewater infrastructure (for example, odour may be a concern).*
> - *phasing new development so that water and wastewater infrastructure will be in place when and where needed. The impact on designated sites of importance for biodiversity should be considered to ensure the required infrastructure is in place before any environmental effects occur."*

2.4.3 Water quality considerations are detailed in paragraph 006 of the guidance – see below.

> ***"Water quality*** *- Plan-making may need to consider:*
>
> - *how to help protect and enhance local surface water and groundwater in ways that allow new development to proceed and avoids costly assessment at the planning application stage. For example, can the plan steer potentially polluting development away from the most sensitive areas, particularly those in the vicinity of drinking water supplies (designated source protection zones or near surface water drinking water abstractions)*
> - *where an assessment of the potential impacts on water bodies and protected areas under the Water Environment Regulations 2017 may be required, consider the type or location of new development*
> - *whether measures to improve water quality, for example sustainable drainage schemes, can be used to address impacts on water quality in addition to mitigating flood risk*

2.4.4 Wastewater considerations is detailed in paragraph 007 of the guidance – see below.

> ***"Wastewater*** *- Plan-making may need to consider:*
>
> - *the sufficiency and capacity of wastewater infrastructure*
> - *the circumstances where wastewater from new development would not be expected to drain to a public sewer*
> - *the capacity of the environment to receive effluent from development in different parts of a strategic policy-making authority's area without preventing relevant statutory objectives being met."*

2.4.5 Cross-boundary considerations is detailed in paragraph 008 of the guidance – see below.

> ***"Cross-boundary issues**:*
>
> *Water supply and water quality issues often cross local authority boundaries and can be best considered on a catchment basis. Liaison between strategic policy-making authorities, the Environment Agency, catchment partnerships and water and sewerage companies from the outset (at the plan scoping and evidence gathering stages of plan-making) will help to identify water supply and quality issues, the need for new water and wastewater infrastructure to fully account for proposed growth and other relevant issues such as flood risk. The duty to cooperate across boundaries applies to water supply and quality issues, and should be evidenced through a Statement of Common Ground.*
>
> *The Department for Environment, Food and Rural Affairs has published a policy framework to encourage the wider adoption of an integrated catchment-based approach to improving the quality of the water environment:*
>
> - *to deliver positive and sustained outcomes for the water environment by promoting a better understanding of the environment at a local level; and*
> - *to encourage local collaboration and more transparent decision-making when both planning and delivering activities to improve the water environment."*

2.5 Reading Borough Council Local Plan

Adopted Reading Local Plan

2.5.1 The Adopted Reading Local Plan[5] is the document that guides development in Reading up to 2036, and was adopted in November 2019. The Local Plan replaced all existing development plans in Reading, meaning that the Core Strategy (adopted 2008, amended 2015), Reading Central Area Action Plan (adopted 2009) and Sites and Detailed Policies Document (adopted 2012, amended 2015) all ceased to apply once the Local Plan was adopted, with the exception of minerals and waste planning.

2.5.2 The Local Plan notes that effective protection of the environment is a key aspect of sustainable development, and reducing pollution is one of the core planning principles in the NPPF. **Policy EN16**, illustrated below, prevents harmful development, mitigates the impact of potentially polluting developments and ensures that developments and receptors that are sensitive to pollution are separated from sources of such pollution. Sensitive receptors can include particularly sensitive uses, as well as sensitive features such as source protection zones or groundwater aquifers.

[5] https://images.reading.gov.uk/2019/12/Local_Plan_Adopted_November_2019.pdf

> ***"Policy EN16: Pollution and Water Resources***
>
> *Development will only be permitted where it would not be damaging to the environment and sensitive receptors through land, noise or light pollution; where it would result in no deterioration in, or ideally enhance, ground and surface water quality; and where adequate water resources, sewerage and wastewater treatment infrastructure will be in place to support the proposed development prior to occupation.*
>
> *Proposals for development that are sensitive to the effects of noise or light pollution will only be permitted in areas where they will not be subject to high levels of such pollution, unless adequate mitigation measures are provided to minimise the impact of such pollution.*
>
> *Development will only be permitted on land affected by contamination where it is demonstrated that the contamination and land gas can be satisfactorily managed or remediated so that it is suitable for the proposed end use and will not impact on the groundwater environment, human health, buildings and the wider environment, during demolition and construction phases as well as during the future use of the site."*

Reading Local Plan Partial Update

2.5.3 A Review of the Local Plan was carried out in March 2023, which concluded that there was a need to undertake a Partial Update of the Local Plan to cover around half of the policies in the plan. A consultation on Scope and Content of the Local Plan Partial Update (under Regulation 18) took place between November 2023 and January 2024. A Pre-Submission Draft Local Plan Partial Update was subject to consultation (under Regulation 19) in November and December 2024. The Local Plan Partial Update[6] was submitted to the Secretary of State on 9th May 2025.

2.5.4 Both the EA and Thames Water Utilities Ltd (TWUL) have been consulted as part of the Local Plan Partial Update review. TWUL provided their comments on 24th January 2024 (refer to **Appendices A and B**), as well as comments[7] on the pre-submission Draft partial update on 18th December 2024. The EA provided their comments on 9th February 2024 (refer to **Appendix C**), as well as comments on the pre-submission Draft partial update[8] on 17th December 2024.

2.5.5 The EA has also provided comments on the proposed allocated sites within all the areas in Reading, which are mainly related to flood risk, so they have not been assessed in this Chapter. The EA comments on the proposed allocated sites are illustrated in **Appendix D**.

Thames Water Consultation on the Local Plan Partial Update

2.5.6 TWUL is the wastewater treatment provider for the Reading Borough area.

2.5.7 TWUL provided comments on the Reading Local Plan Partial Update Consultation that took place in November 2023. The full TWUL response is illustrated in **Appendix A**.

2.5.8 In the comments, TWUL noted the following key points in reference to **Water Resources and Wastewater infrastructure**:

- *'We generally support the reference to water and wastewater infrastructure, but it is such an important issue that it should be covered in a separate 'Water Resources and Wastewater Infrastructure' policy in the new Local Plan and that it should be improved in line with the following detailed comments.*

[6] Local Plan Partial Update Submission Draft May 2025

[7] LP007-5-of-6-Regulation-19-representations-T-to-U.pdf

[8] LP007-1-of-6-Regulation-19-representations-A-to-E.pdf

- *Water and wastewater infrastructure is essential to any development. Failure to ensure that any required upgrades to the infrastructure network are delivered alongside development could result in adverse impacts in the form of internal and external sewer flooding and pollution of land and water courses and/or low water pressure.*

- *A key sustainability objective for the preparation of Local Plans and Neighbourhood Plans should be for new development to be co-ordinated with the infrastructure it demands and to take into account the capacity of existing infrastructure. Paragraph 20 of the revised National Planning Policy Framework (NPPF), 2021, states: "Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for… infrastructure for waste management, water supply, wastewater…"*

- *Paragraph 11 states: "Plans and decisions should apply a presumption in favour of sustainable development. For plan-making this means that:*

  a) All plans should promote a sustainable pattern of development that seeks to: meet the development needs of their area; align growth and infrastructure; improve the environment; mitigate climate change (including by making effective use of land in urban areas) and adapt to its effects"

- *Paragraph 28 relates to non-strategic policies and states: "Non-strategic policies should be used by local planning authorities and communities to set out more detailed policies for specific areas, neighbourhoods or types of development. This can include allocating sites, the provision of infrastructure…"*

- *Paragraph 26 of the revised NPPF goes on to state: "Effective and on-going joint working between strategic policy-making authorities and relevant bodies is integral to the production of a positively prepared and justified strategy. In particular, joint working should help to determine where additional infrastructure is necessary…."*

- *The web based National Planning Practice Guidance (NPPG) includes a section on 'water supply, wastewater and water quality' and sets out that Local Plans should be the focus for ensuring that investment plans of water and sewerage/wastewater companies align with development needs. The introduction to this section also sets out that "Adequate water and wastewater infrastructure is needed to support sustainable development" (Paragraph: 001, Reference ID: 34-001-20140306).*

- *It is important to consider the net increase in water and wastewater demand to serve the development and also any impact that developments may have off site, further down the network. The new Local Plan should therefore seek to ensure that there is adequate water and wastewater infrastructure to serve all new developments. Thames Water will work with developers and local authorities to ensure that any necessary infrastructure reinforcement is delivered ahead of the occupation of development. Where there are infrastructure constraints, it is important not to under estimate the time required to deliver necessary infrastructure. For example: local network upgrades take around 18 months and Sewage Treatment & Water Treatment Works upgrades can take 3-5 years.*

- *In light of the above comments and Government guidance we consider that the New Local Plan should include a specific policy on the key issue of the provision of 'Water Resources/Supply and Sewerage/Wastewater Infrastructure' to service development. This is necessary because it will not be possible to identify all of the water/sewerage infrastructure required over the plan period due to the way water companies are regulated and plan in 5 year periods (Asset Management Plans or AMPs). We therefore recommend that there is a separate policy to cover both 'Water Resources & Wastewater Infrastructure'.*

2.5.9 TWUL also recommended that the following text can be added in the new Local Plan Partial Update in relation to water supply and wastewater infrastructure:

'Where appropriate, planning permission for developments which result in the need for off-site upgrades, will be subject to conditions to ensure the occupation is aligned with the delivery of necessary infrastructure upgrades.

'The Local Planning Authority will seek to ensure that there is adequate water and wastewater infrastructure to serve all new developments. Developers are encouraged to contact the water/waste water company as early as possible to discuss their development proposals and intended delivery programme to assist with identifying any potential water and wastewater network reinforcement requirements. Where there is a capacity constraint the Local Planning Authority will, where appropriate, apply phasing conditions to any approval to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of the relevant phase of development.'

2.5.10 TWUL noted that *'Local Authorities should also consider both the requirements of the utilities for land to enable them to meet the demands that will be placed upon them. This is necessary because it will not be possible to identify all the water and wastewater/sewerage infrastructure required over the plan period due to the way water companies are regulated and plan in 5 year periods (AMPs). Thames Water are currently in AMP7 which covers the period from 1st April 2020 to 31st March 2025. AMP8 will cover the period from 1st April 2025 to 31st March 2030. The Price Review, whereby the water companies' AMP8 Business Plan will be agreed with Ofwat during 2024'.*

2.5.11 Hence, TWUL recommended the following text to be added in the new Local Plan Partial Update.

'*The development or expansion of water supply or wastewater facilities will normally be permitted, either where needed to serve existing or proposed development in accordance with the provisions of the Development Plan, or in the interests of long-term water supply and wastewater management, provided that the need for such facilities outweighs any adverse land use or environmental impact that any such adverse impact is minimised*.'

2.5.12 In relation to '**development within the vicinity of Sewage Treatment Works and Sewage Pumping Station'**, TWUL noted that *'the new Local Plan should assess impact of any development within the vicinity of existing sewage works/sewage pumping stations in line with the Agent of Change principle set out in the NPPF, paragraph 187'*.

2.5.13 TWUL also suggested that '*where development is being proposed within 800m of a sewage treatment works or 15m of a sewage pumping station, the developer or local authority should liaise with Thames Water to consider whether an odour impact assessment is required as part of the promotion of the site and potential planning application submission. The odour impact assessment would determine whether the proposed development would result in adverse amenity impact for new occupiers, as those new occupiers would be located in closer proximity to a sewage treatment works/pumping station. ….The odour impact study would establish whether new resident's amenity will be adversely affected by the sewage works and it would set the evidence to establish an appropriate amenity buffer'.*

2.5.14 On this basis, TWUL recommended that text similar to the following should be incorporated into a policy of the Local Plan:

'When considering sensitive development, such as residential uses, close to the Sewage Treatment Works, a technical assessment should be undertaken by the developer or by the Council. The technical assessment should be undertaken in consultation with Thames Water. The technical assessment should confirm that either: (a) there is no adverse amenity impact on future occupiers of the proposed development or; (b) the development can be conditioned and mitigated to ensure that any potential for adverse amenity impact is avoided'.

2.5.15 TWUL made the following recommendations in relation to the proposed changes to Policy SR1 regarding the Island Road area: '*In relation to the site currently allocated as SR1c, Island Road*

A33 Frontage Thames Water continues to support the flexible commercial uses proposed in this allocation. Since the allocation was made over five years ago the need for and importance of storage and distribution has increased. This was reflected in the Council's intention in its recent Call for Sites to review policies SR1 and EM1 responding to the NPPF para 83 (now 87) requiring planning policy to consider the need 'for storage and distribution operations at a variety of scales and in suitably accessible locations'. The SR1c site is able to operate at a viable scale for a storage and distribution operation and is in a highly sustainable and accessible location adjacent to the A33. The addition of storage and distribution to the allocation is considered to be compatible to the neighbouring uses including the A33 and Sewerage Treatment Works. The site remains deliverable in the Local Plan period with no known deliverability constraints. The extant allocation demonstrates the acceptability of employment uses including industrial and warehousing. Storage and distribution is considered to have similar impacts to general industrial uses so would therefore not require any further assessment. Thames Water otherwise has no comments to make on the proposed changes and supports the continued allocation.'

2.5.16 TWUL has also provided a table with specific comments on the proposed allocated sites, shown in **Appendix B**. Desktop assessments on water supply, sewerage/wastewater network and wastewater treatment infrastructure in relation to the proposed sites have been undertaken, however TWUL noted that more detailed modelling may be required to refine the requirements. Also, as the housing numbers had not been supplied at the time of the preparation of the TWUL assessment table, and therefore, TWUL commented as much as possible in terms of infiltration, but could not provide capacity comments.

2.5.17 TWUL's specific comments on the proposed allocated sites are shown in **Appendix B** and are further discussed in **Section 3** of this report.

Environment Agency Consultation on the Local Plan Partial Update

2.5.18 The EA's consultation response to the Reading Local Plan Partial Update is appended in **Appendix B**.

EA Comments on Water and Wastewater Infrastructure

2.5.19 The EA has provided comments on the Water and Wastewater infrastructure, and more specifically on the Reading Sewage Treatment Works (STW) (refer to **Appendix C**).

2.5.20 The EA has assumed that the wastewater flows from the additional proposed development will flow to Reading STW. The EA has also noted the following:

- Reading STW has a maximum permitted flow of 177,725 m3/d. In 2022 the maximum flow was 105,282m3/d and the average 63,752 m3/d. In 2021 (which was a wetter year) the maximum and average recorded flows were 128,663m3/d and 69,339 m3/d respectively. This suggests there is some capacity within the existing discharge permit for new development.

- The EA would like to convert the maximum flow value of the permit to a Dry Weather Flow (DWF). This is the standard and preferred method for Environmental Permits and helps the EA to more accurately measure compliance. It is important that TWUL engage with the EA as soon as possible to make this permit alteration.

- The storm overflow setting (sometimes known as the Flow to Full Treatment (FFT)) at Reading is 1572 l/s. This is likely below the 3PG+iMax+3E (or 3xpDWF) advised minimum standard for overflows for the population served. This means that additional development could increase the risk of storm overflows either in wet or dry conditions. Over the past 3 years Reading STW has been a relatively low spilling site, but the EA would want assurances from TWUL that additional development will not cause this site to be subject to more frequent spills.

- The permitted storm tank capacity at Reading is 11,333m^3, however a recent compliance assessment report identified the available storm tank on site to be 13,098m^3. EA guidance states

that STW should have storm tank capacity of 68 litres per head of population served. The Population Equivalent at Reading STW for the 2022 compliance year (2023 data not available at time of writing) was 210,585. Therefore, the storm tank capacity available should be around 14,300 m^3. This is not significantly more than the available storage on site, however, if the storm tank size is not increased to keep pace with growth within the catchment, the risk of storm discharges that have not benefited from storm tank settlement will increase, which will potentially further deteriorate the receiving water body.

- The EA visited Reading STW in June 2023, and the visit resulted in TWUL being issued a Compliance Assessment Report (CAR) form in which several permit breaches were recorded. Most notably was that Reading STW appeared to be unable to handle incoming flows during wet weather and engages in a practice called 'flow clipping' to ensure compliance and regulatory sampling. This is considered a serious breach of an Environment Permit as it sends incoming flows to the storm tank before the permitted FFT has been reached in order to ease the pressure on the STW process. Until these issues are resolved, any additional flows arriving from new development will increase pressure on Reading STW's processes and risk flows being discharged to the storm tanks and/or the environment in breach of the permit. This poses a significant environment risk. The CAR form (which is in the public register) identifies actions for TWUL to take in order to come back into compliance at Reading STW. As a minimum, the EA would expect these to be completed before any new developments are connected to the sewerage network.

- Other breaches were identified in the CAR form and need to be resolved.

- In the documents provided there are comments from TWUL highlighting capacity issues, particularly in South and West Reading. The EA assumed that these capacity issues are with the sewerage network and/or any network pumping stations. Any additional flows into an under-capacity network can lead to situations such as rising main or pumping station failures, which can cause significant environmental damage. Improvements must be made to the network to ensure these events occur before new developments come online (i.e. improvements need to be made in advance of additional flows impacting on capacity, to avoid such damaging consequences).

EA Comments on Local Plan Policy EN16

2.5.21 In terms of the Local Plan Policy EN16 (Pollution and Water Resources), the EA suggested adding the highlighted text, to strengthen the policy.

'Development will only be permitted where it would not be damaging to the environment and sensitive receptors through land, noise or light pollution; where it would result in no deterioration in, or ideally enhance, land quality, groundwater and surface water quality; and where adequate water resources, sewerage and wastewater treatment infrastructure will be in place to support the proposed development prior to occupation.

Proposals for development that are sensitive to the effects of noise or light pollution will only be permitted in areas where they will not be subject to high levels of such pollution, unless adequate mitigation measures are provided to minimise the impact of such pollution.

Development will only be permitted on land affected by contamination where it is demonstrated that the contamination (of land and/or controlled waters) and land gas can be satisfactorily managed or remediated so that it is suitable for the proposed end use and will not impact on the groundwater environment, human health, buildings and the wider environment, during demolition and construction phases as well as during the future use of the site.'

2.5.22 The EA noted that that actions have been identified to resolve those issues, and the EA would expect those to be in place before the STW is put under more pressure from additional

development. Similarly, any sewerage networks improvements that have been identified need to be completed as soon as practicable.

2.5.23 It is assumed that the wastewater flows from the additional proposed development will flow to Reading STW. If any development on the allocated site is to be served by a STW other than Reading STW, the EA should be informed as soon as possible so that the EA can assess the impacts.

2.6 Drainage and Wastewater Management Plan (DWMP)

2.6.1 TWUL's first DWMP[9] was published in May 2023, after the public consultation in June 2022. This 25-year plan (2025-2050) is a long-term strategic plan that sets out how wastewater systems, and the drainage networks that impact them, are to be extended, improved, and maintained to ensure they are robust and resilient to future pressures.

TWUL will update the DWMP every 5 years, working with their stakeholders and establishing lessons learnt from cycle 1. The Draft DWMP 2028, covering a planning period of 2030-2055, will be published for public consultation in November 2027 and the final plan will be published in August 2028.

[9] https://www.thameswater.co.uk/about-us/regulation/drainage-and-wastewater-management/our-dwmp

3 Proposed Growth

3.1 Population Projections and Occupancy Rate

3.1.1 The latest Office for National Statistics (ONS) population and household projections have been used to determine the occupancy rate of each household coming forward in the plan period (2023-2041) and have been provided in **Table 3.1**.

Table 3.1: Household Population, Number of Households and Occupancy Rate (ONS datasets)

	Year 2023	Projection for 2041
Household Population[10]	160,022	161,952
Number of Households[10]	65,611	68,800
Occupancy Rate	**2.44**	**2.35**

3.1.2 It should be noted that, in practice, given the small size of the dwellings likely to be delivered over the Local Plan period (refer to **Section 3.2** below), the occupancy of the new households will be lower than 2.35.

3.1.3 However, in order to consider the 'worst-case' scenario, the occupancy rate of 2.35 will be used to calculate the Wastewater Treatment Capacity in 2041 (refer to **Section 4.4**).

3.2 Permitted Development and Local Plan Delivery

3.2.1 The expected housing growth during the updated Local Plan period (2023-2041) has been provided by RBC.

3.2.2 The housing presented below contains the major sites (10+ dwellings) that are likely to be developed over the updated Local Plan period.

3.2.3 The sites are categorised into:

- Sites with planning permissions
- Site with a resolution to grant permission subject to S106 agreement.
- Existing allocations (with amended development totals).
- Sites nominated for or being considered for inclusion in the Local Plan.

3.2.4 The identified residential dwelling numbers, as well as the net change in non-residential floorspaces that have been identified over the updated Local Plan period are presented in **Table 3.2** below.

10 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/householdprojectionsforenglanddetaileddataformodellingandanalysis

Table 3.2: Number of Dwellings and Net Change in Non-Residential Floorspaces identified over the updated Local Plan Period

Development status	Number of dwellings (net gain)	Net change in no-residential floorspaces (in sq. m)
Permitted development including: Permitted in hybrid (partly under construction), Permitted in outline (not started), Permitted demolition complete (not started), Permitted (not started), Permitted (under construction), Phase 3 permitted (not started), Potential, Resolution to grant permission	5,455	355,440
Development identified in the Local Plan including: Allocated (no permission), Allocated (partly permitted), Considered or Nominated in the Local Plan process, Not started.	9,931	15,164
Totals	**15,386**	**370,604**

3.3 Central Reading

3.3.1 The currently adopted Reading Local Plan identifies several sites within the Central Reading area which would '*give early consideration to the potential impact on water and wastewater infrastructure in conjunction with Thames Water, and make provision for upgrades, where required*'.

3.3.2 These areas include:

- CR11: Station/River Major Opportunity area
- CR12: West side Major Opportunity area
- CR13: East side Major Opportunity area

3.3.3 TWUL has provided specific recommendations on the wastewater infrastructure for the sites in the Central Reading area, shown in **Table 3.3**. The site-specific recommendations are also shown in **Appendix B**.

Table 3.3: TWUL Recommendations on Wastewater Infrastructure for Central Reading area

Site Name	TWUL Wastewater Infrastructure response
Sapphire Plaza, H M Revenue, Watlington Street, Customs, Reading, Berkshire RG1 4TA (Appr. 18/2/20)	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
Site Cen10: Part of Reading College, Kings Road	
Site Cen3: John Lewis Depot, Mill Lane	
Site Cen8: Kennet Place, Kings Road	
Site Cen1: Aquis House, 49-51 Forbury Road and 33 Blagrave Street	The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.
Site Cen2: Reading Central Library, Abbey Square	
Site Cen4: Crowne Plaza Reading, Richfield Avenue	
Site Cen5: 2 Norman Place	The scale of development/s is likely to require upgrades to the wastewater network. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The developer can request information on network infrastructure by visiting the Thames Water website. https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development. These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
Site Cen6: Reading Bridge House, George Street	
Site Cen7: Tesco Extra, Napier Road	

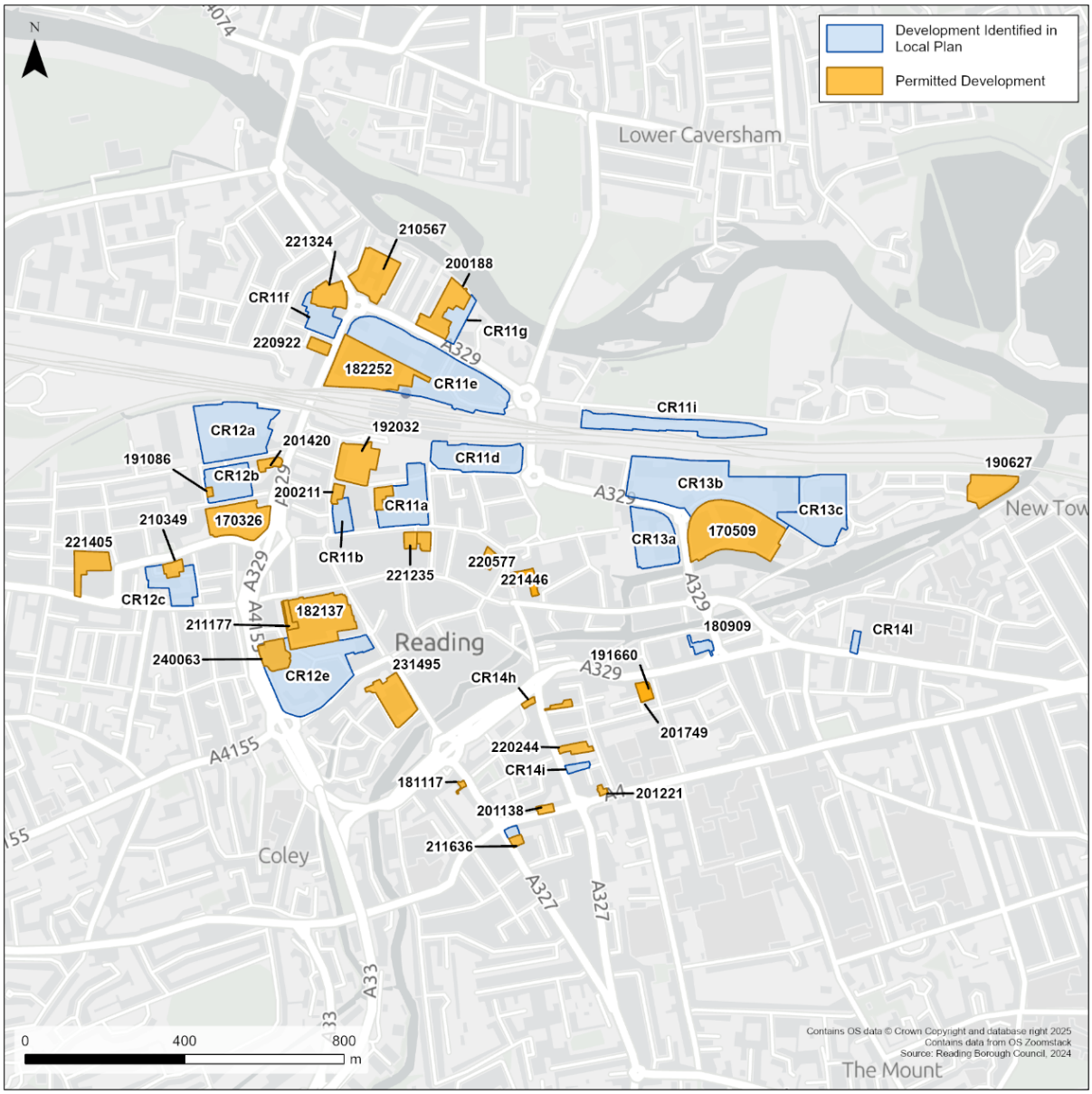
3.3.4 **Table 3.4** below illustrates the number of dwellings and the net change in non-residential floorspaces within the Central Reading area.

Table 3.4: Number of Dwellings and Net Change in Non-Residential Floorspaces identified over the updated Local Plan Period in the Central Reading area

Development status	Number of dwellings (net gain)	Net change in no-residential floorspaces (in sq. m)
Permitted development	3,553	186,370
Development identified in the Local Plan	6,314	-74,166
Totals	**9,867**	**112,204**

3.3.5 The sites detailed above are indicated on **Figure 3.1**.

Figure 3.1: Central Reading – Permitted Development and Sites identified in Local Plan



3.4 South Reading

3.4.1 The currently adopted Reading Local Plan identifies several sites within the South Reading area which would *'Take account of the potential impact on water and wastewater infrastructure in conjunction with Thames Water, and make provision for upgrades, where required'.*

3.4.2 These areas include:

- SR1: Island Road Major Opportunity area
- SR2: Land North of Manor Farm Road Major Opportunity area
- SR3: South of Elgar Road Major Opportunity area
- SR4e: Part of former Berkshire Brewery site.

3.4.3 TWUL has provided specific recommendations on the wastewater infrastructure for the sites in the South Reading area, shown in **Table 3.5**. The site-specific recommendations are also shown in **Appendix B**.

Table 3.5: TWUL Recommendations on Wastewater Infrastructure for South Reading area

Site Name	TWUL Wastewater Infrastructure response
Site Sou1: Reading Link Retail Park	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
Site Sou2: Tunbridge Jones, Cradock Road	
Site Sou3: Former Sales and Marketing Suite, Drake Way	
Site Sou5: 2 Hexham Road	The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.

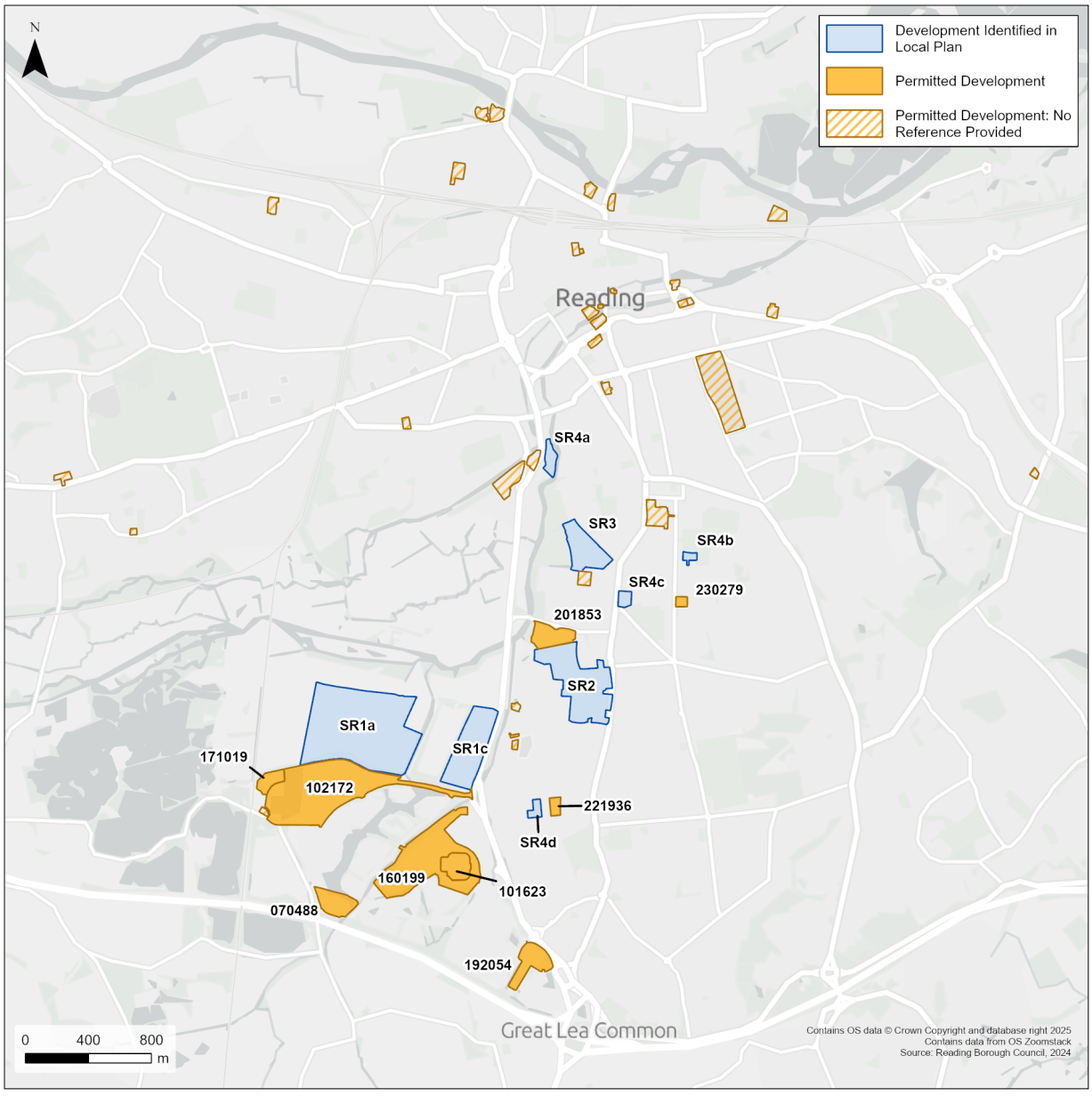
3.4.4 **Table 3.6** illustrates the number of dwellings and the net change in non-residential floorspaces within the South Reading area.

Table 3.6: Number of Dwellings and Net Change in Non-Residential Floorspaces identified over the updated Local Plan Period in the South Reading area

Development status	Number of dwellings (net gain)	Net change in no-residential floorspaces (in sq. m)
Permitted development	962	135,569
Development identified in the Local Plan	2,492	50,364
Totals	**3,454**	**185,933**

3.4.5 The sites detailed above are illustrated in **Figure 3.2**.

Figure 3.2: South Reading – Permitted Development and Sites identified in Local Plan



3.5 West Reading and Tilehurst

3.5.1 The currently adopted Reading Local Plan identifies several sites within the West Reading and Tilehurst area which would *'Take account of the potential impact on water and wastewater infrastructure in conjunction with Thames Water, and make provision for upgrades, where required'*.

3.5.2 These areas include:

- WR3s: Land at Kentwood Hill
- WR3t: Land at Armour Hill

3.5.3 TWUL has provided specific recommendations on the wastewater infrastructure for the sites in the West Reading and Tilehurst area, shown in **Table 3.7**. The site-specific recommendations are also shown in **Appendix B**.

Table 3.7: TWUL Recommendations on Wastewater Infrastructure for West Reading and Tilehurst

Site Name	TWUL Wastewater Infrastructure response
Site Wes1: Land west of Milford Road	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
Site Wes2: 72 Berkeley Avenue	
Site Wes3: Land at 132-134 Bath Road	
Site Wes4: Southcote Library, 234 Southcote Lane	The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.

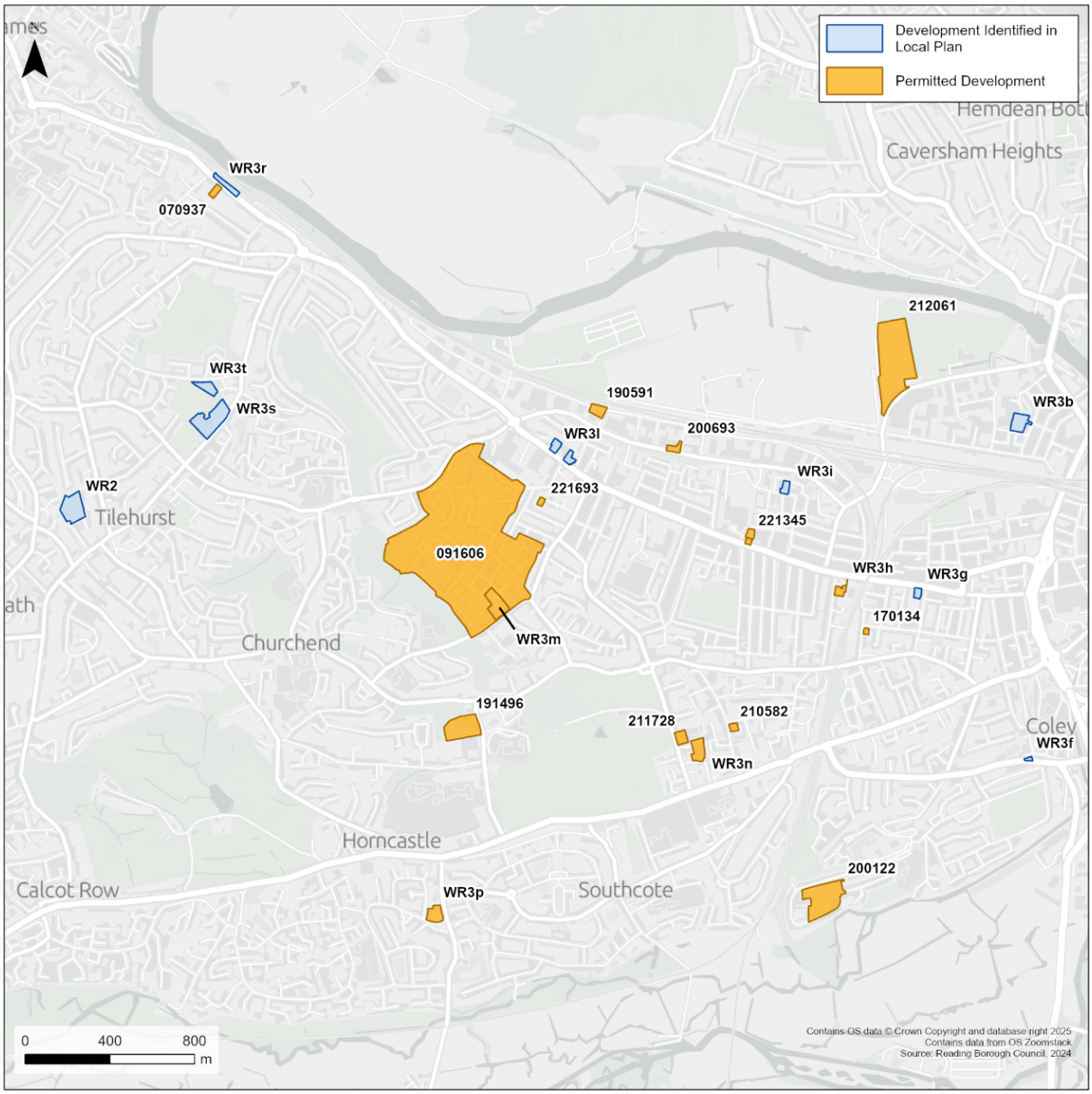
3.5.4 **Table 3.8** illustrates the number of dwellings and the net change in non-residential floorspaces within the West Reading and Tilehurst area.

Table 3.8: Number of Dwellings and Net Change in Non-Residential Floorspaces identified over the updated Local Plan Period in the West Reading and Tilehurst

Development status	Number of dwellings (net gain)	Net change in no-residential floorspaces (in sq. m)
Permitted development	628	19,271
Development identified in the Local Plan	669	-6,699
Totals	**1,297**	**12,572**

3.5.5 The sites detailed above are illustrated in **Figure 3.3**.

Figure 3.3: West Reading and Tilehurst – Permitted Development and Sites identified in Local Plan



3.6 Caversham and Emmer Green

3.6.1 The currently adopted Reading Local Plan identifies a site – CA1b: Part of Reading Golf Course, Kidmore End Road – within the Caversham and Emmer Green area which would *"Take account of the potential impact on water and wastewater infrastructure in conjunction with Thames Water, and make provision for upgrades, where required'*.

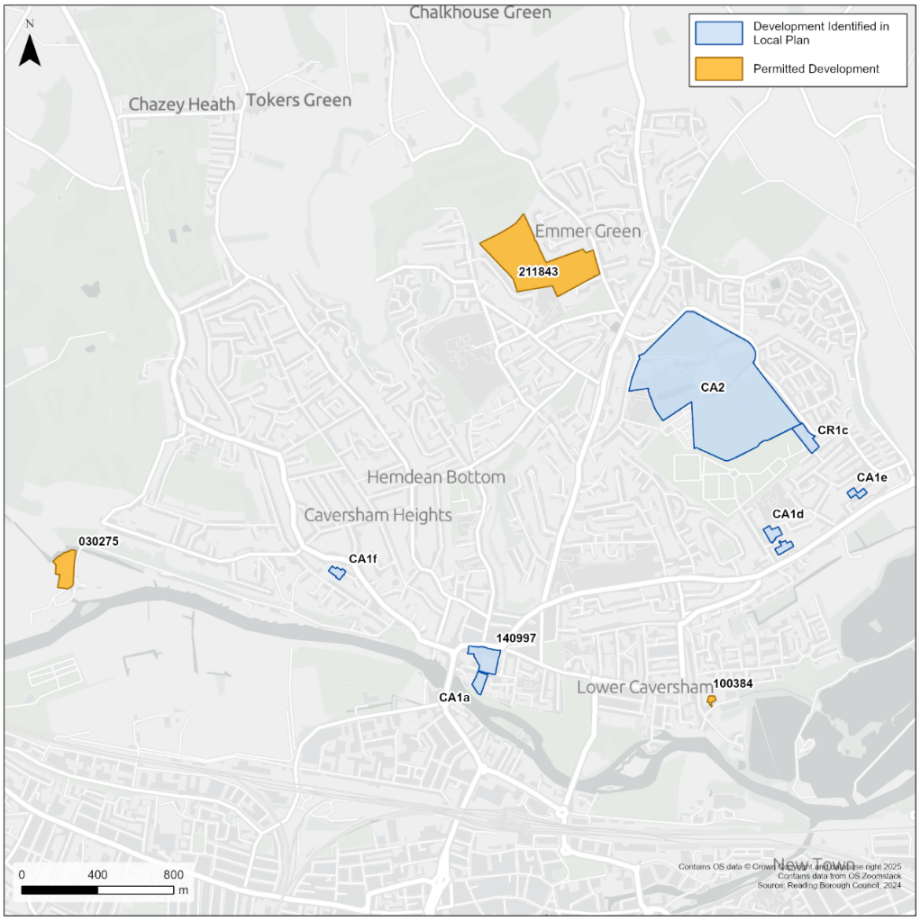
3.6.2 **Table 3.9** below illustrates the number of dwellings and the net change in non-residential floorspaces within the Caversham and Emmer Green area.

Table 3.9: Number of Dwellings and Net Change in Non-Residential Floorspaces identified over the updated Local Plan Period in the Caversham and Emmer Green area

Development status	Number of dwellings (net gain)	Net change in no-residential floorspaces (in sq. m)
Permitted development	223	4,877
Development identified in the Local Plan	313	-10,388
Totals	**536**	**-5,511**

3.6.3 The sites detailed above are illustrated in **Figure 3.4**.

Figure 3.4: Caversham & Emmer Green – Permitted Development and Sites identified in Local Plan



3.7 East Reading

3.7.1 The currently adopted Reading Local Plan identifies a site – ER1e: St Patricks' Hall, Northcourt Avenue – within East Reading area which would '*Take account of the potential impact on water and wastewater infrastructure in conjunction with Thames Water, and make provision for upgrades, where required*'.

3.7.2 TWUL has provided specific recommendations on the wastewater infrastructure for the sites in the West Reading and Tilehurst area, shown in **Table 3.10**. The site-specific recommendations are also shown in **Appendix B**.

Table 3.10: TWUL Recommendations on Wastewater Infrastructure for East Reading

Site Name	TWUL Wastewater Infrastructure response
Site Eas1: Land at 9 Upper Crown Street	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.

3.7.3 **Table 3.11** below illustrates the number of dwellings and the net change in non-residential floorspaces within the East Reading area.

Table 3.11: Number of Dwellings and Net change in Non-Residential Floorspaces identified over the updated Local Plan Period in the East Reading

Development status	Number of dwellings (net gain)	Net change in no-residential floorspaces (in sq. m)
Permitted development	89	9,353
Development identified in the Local Plan	143	56,053
Totals	**232**	**65,406**

3.7.4 The sites detailed above are illustrated in **Figure 3.5**.

Figure 3.5: East Reading – Permitted Development and Sites identified in Local Plan

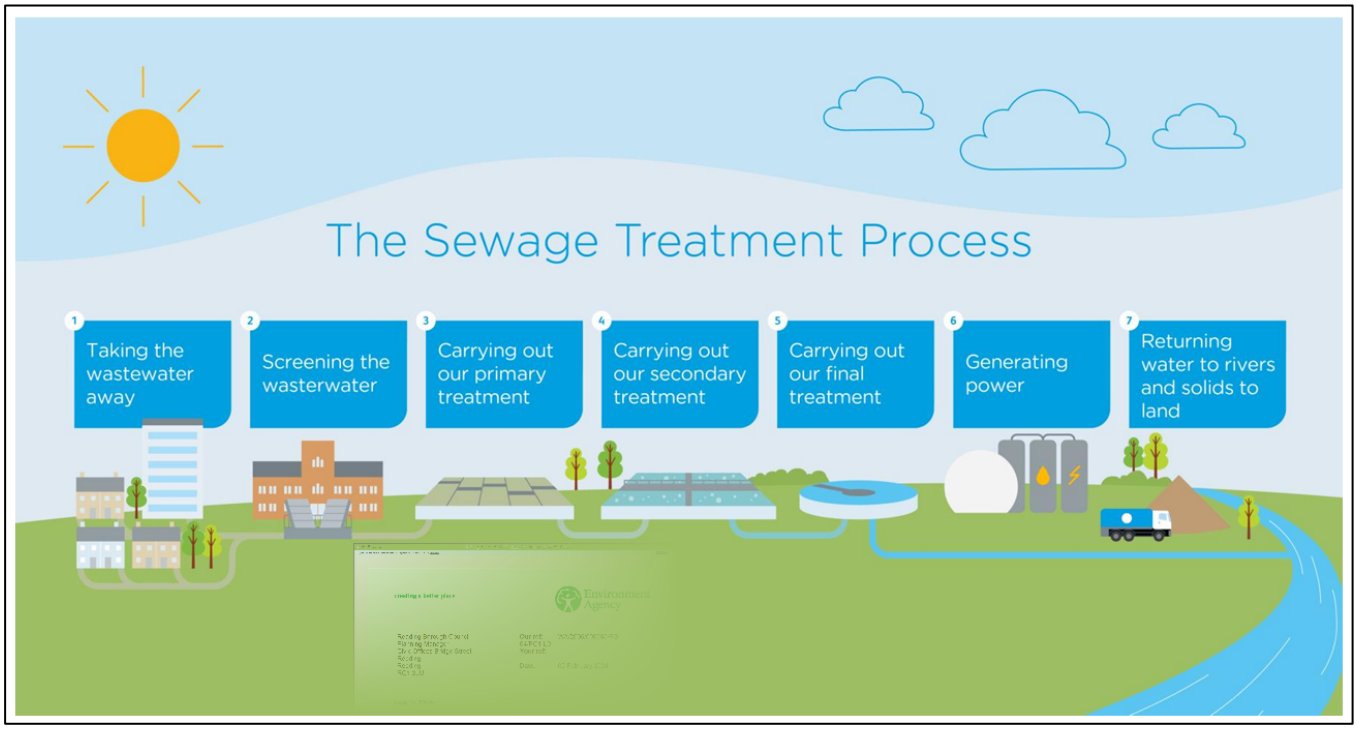
4 Infrastructure Capacity

4.1 Overview

4.1.1 As noted in **Chapter 2**, TWUL are the wastewater treatment provider for the Reading Borough area.

4.1.2 Treated wastewater is discharged to nearby rivers and streams. The quality of the treated wastewater is strictly regulated by the EA and monitored closely by the EA to ensure it meets their standards.

Figure 4.1: The Sewage Treatment Process[11]



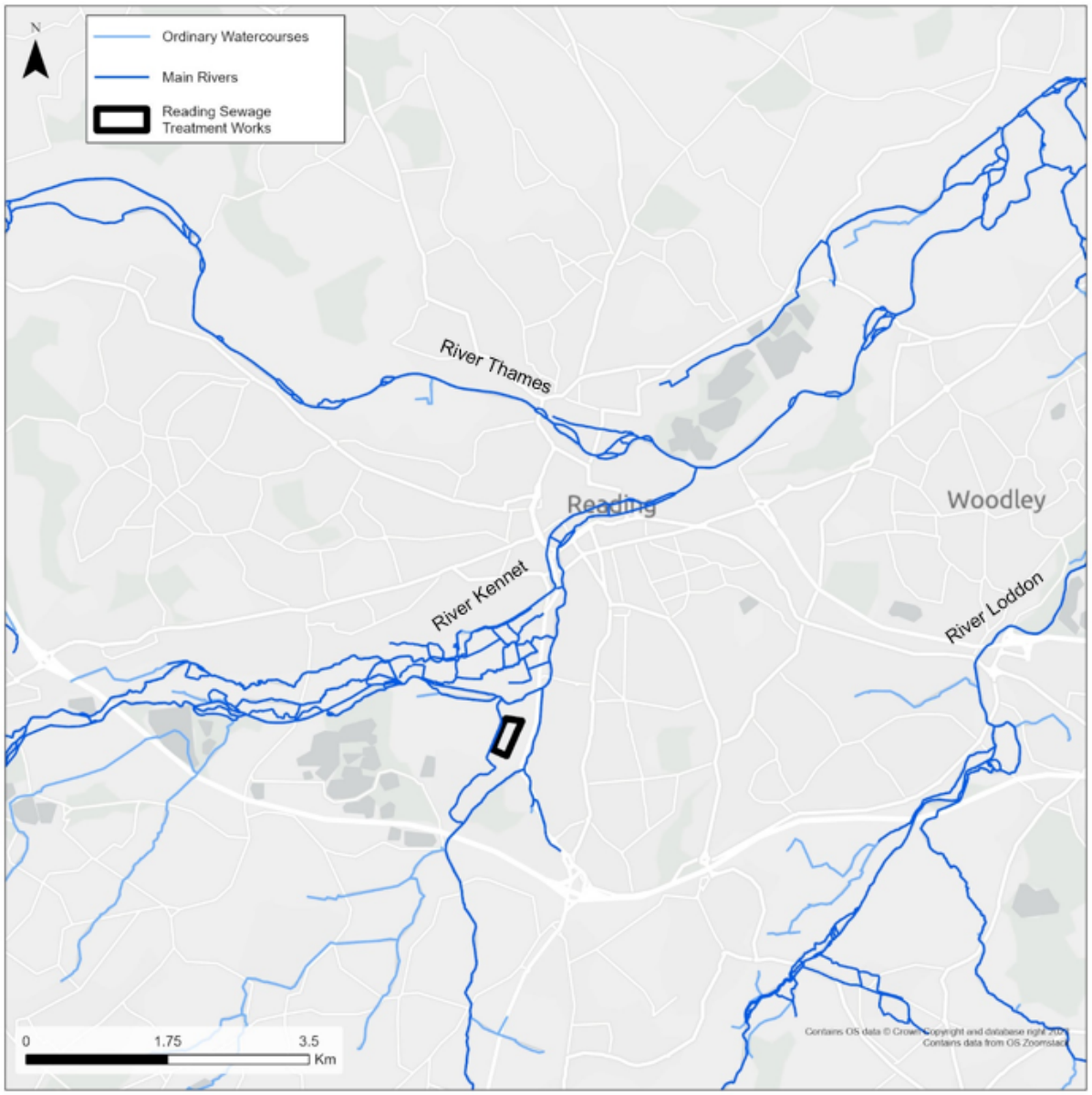
4.1.3 The existing STWs are operated and maintained by TWUL. Wastewater produced in the Borough is treated at the Reading STW, located south of Reading town centre off the A33, close to Junction 11 of the M4.

4.1.4 The Reading STW was constructed in 2004. In the 2018 WQA Study, it was noted that the STW had not required any major capital investment programmes of work since the treatment capacity had been in excess of the predicted growth, for the foreseeable future (at the time of writing of the 2018 report).

4.1.5 **Figure 4.2** illustrates the location of Reading STW in relation to the watercourses in the Borough.

[11] The sewage treatment process | Education | Thames Water

Figure 4.2: Reading STW Location



4.2 Summary of the 2018 Capacity Assessment

4.2.1 The 2018 WQA noted that TWUL had confirmed that the calculated (as of 2018) capacity at Reading STW was approximately 280,000 Population Equivalent (PE), and that TWUL's PE assessment was at 204,200. Therefore, a headroom of approximately 75,800 PE theoretically existed at the STW.

4.2.2 The report therefore concluded that - assuming on average there are three people per home - the projected Local Plan growth to 2031 of 15,433 homes within the Borough equated to a PE increase of 46,299, which could be accommodated within the available headroom.

4.3 Existing Wastewater Treatment Capacity

4.3.1 TWUL has provided permitted discharges information of the STWs, shown in **Table 4.2**. Permitted discharges are based on the Dry Weather Flow[12] (DWF). Compliance against the permitted DWF is assessed by comparing it to the measured non-parametric 80% exceeded flow.

4.3.2 Reading STW has Maximum Daily Volume (MDV) permit of 177,275 m^3/d. The EA has also informed us that Reading STW is one of a few remaining large STWs with an MDV permit and the EA are working with TWUL to convert this into a DWF permit. Standard conversion for DWF is MDV/3, which for Reading STW would be 59,061m^3/d.

4.3.3 According to the EA guidance[13], the non-parametric 20-percentile value of a time series of measured Total Daily Volume (TDV) data provides a good estimate of DWF. The 20-percentile figure is that value which is exceeded by 80% of the recorded daily values. It is also known as the 'Q80'.

4.3.4 STW flows have been received from both the EA and TWUL and a summary is illustrated in **Table 4.1.**

- The EA has provided DWF annual returns data (which have been provided as yearly averages in m^3/day). The period that the dataset covers is 2017 to 2023. However, during 2022, 90% or less DWF of the dataset record was received, so the 2022 records have been omitted from the 2017-2023 average Q80 calculation.
- TWUL has provided the TDV STW flows, recorded every 15 minutes (and provided in m^3/day). The period the dataset covers is 2014 to 2024. The empty cells and the zero values (implying that the instrument did not record a value) have been omitted from the average 2014-2024 Q80 calculation.
- TWUL has also provided final effluent records, recorded every 15 minutes (given in litres/sec). The period the datasets covers is 2014 to 2024. The empty cells and the zero values (implying that the instrument did not record a value) have been omitted from the average 2014-2024 Q80 calculation.

Table 4.1: STW Flow Datasets received

Data	DWF Annual Returns data (provided by the EA)		Total Daily Values (TDV) STW flows summary (provided by TWUL)		Final Effluent Data recorded (provided by TWUL)	
Period:	2017-2023 (original data)	2017-2023 (excl. 2022)	2014-2024 (original data)	2014-2024 (removed zeros/blanks)	2014-2024 (original data)	2014-2024 (removed zeros/blanks)
Q80 (m^3/day)	57,037	57,266	55,558	55,793	38,858	39,254

[12] Dry Weather Flow is the average daily flow to a Sewage Treatment Works during a period without rain.

[13] https://www.gov.uk/government/publications/calculating-dry-weather-flow-dwf-at-waste-water-treatment-works/calculating-dry-weather-flow-dwf-at-waste-water-treatment-works

4.3.5 The Q80 DWF Annual Returns Data, provided by the EA, and the Q80 TDV STW flows, provided by TWUL, are a similar order of magnitude. In order to assess a worse-case scenario, the 2017-2023 data from the EA will be used as the current DWF calculated as Q80 (refer to **Table 4.2**).

4.3.6 The current capacity of Reading STW is shown in **Table 4.2**, where it is calculated that Reading STW currently uses approximately 97% of its permit. The EA has also informed us that the reports for Reading STW show it has been in excess of 59,061 m^3/d for 3 out of the last 4 years, which indicates there are potential capacity concerns.

4.4 Future Wastewater Treatment Capacity

4.4.1 An increase in the residential and employment growth will cause a corresponding increase in the volume and flow of wastewater generated within the Borough. Therefore, it is necessary to consider whether there is sufficient treatment capacity within Reading STW to accommodate this growth, and what new infrastructure is required to provide for the additional wastewater volumes.

4.4.2 It is therefore necessary to calculate the future DFW post-growth in Reading STW, to determine whether the proposed growth can be accommodated. The future growth would be then 'translated' into an additional flow.

4.4.3 The following key assumptions on **residential wastewater generation** have been used to calculate the post-growth DWF:

- The wastewater generation per new dwelling is based on the projected 2041 occupancy rate of 2.35 (refer to **Table 3.1**).
- The average residential wastewater discharge rate is assumed to be 135 litres per person per day (l/p/d). The 135 l/p/d rate is the average wastewater discharge rate between 125 l/p/d (which has been used in similar studies[14] [15]) and 150 l/p/d (which is the average residential wastewater discharge rate according to British Water[16]).

4.4.4 The following key assumptions on **non-residential wastewater generation** have been used to calculate the post-growth DWF:

- The total non-residential wastewater generation has been based on average wastewater generation rates according to British Water[16], shown in **Table 4.3**.
- The references for the occupancy rates of each non-residential use are also shown in column 'Sqm per person' in **Table 4.3**.
- A scaling factor has been applied to account for the non-residential uses that are not fully occupied 24hrs per day. For non-residential uses, which are normally occupied 24hrs per day, such as hospitals, residential care, a scaling factor of 1.0 has been applied. For the rest of the non-residential uses, such as education, offices, leisure, a scaling factor of 0.75 has been applied (refer to **Table 4.3**).

4.4.5 **Table 4.2** illustrates that, based on the assumptions made in this Chapter, post-growth Reading STW exceeds its permitted volumetric capacity. This indicates that Reading STW will not be able to serve the proposed development, shown in **Section 3**, before any upgrade takes place.

[14] https://www.gnlp.org.uk/sites/gnlp/files/2021-11/Greater%20Norwich%20Water%20Cycle%20Study_Final%20Version%20March%202021.pdf

[15] https://www.chelmsford.gov.uk/media/pj4b0dg1/cc003-water-cycle-study-stage-2-detailed-study-2024.pdf

[16] https://www.theseptictankstore.co.uk/wp-content/uploads/British_Water_flows_and_loads.pdf

4.4.6 Additional treatment capacity for Reading STW could be made available through an application by TWUL for a new or revised discharge permit from the EA as part of their five-year Price Review planning process. Therefore, if the actual growth deviates from the projected Ofwat growth, TWUL must address funding for this in the next Price Review process.

Table 4.2: Reading STW Current and Post-growth Capacity

STWs	Current permitted DWF (m^3/d)	Current DWF, calculated as Q80 (m^3/d)	Current Headroom capacity (m^3/d)	Current Permit used (%)	Number of dwellings projected	Additional DWF from residential development (m^3/d)	Additional DWF from non-residential development (m^3/d)	Total additional DWF (m^3/d)	DWF post-growth (m^3/d)	Headroom capacity post-growth (m^3/d)	Future Permit used (%)
	Current				Post growth						
Reading STW	59,092	57,266	1,826	**97%**	15,386	4,881	6,377	11,258	68,524	-9,433	**-16%**

Table 4.3: Calculations of Non-Residential generated Wastewater

Net Change in	Area in sq.m	Sqm per person[17] [18] [19]	Total no of people	Wastewater generation (l/p/d)	Total wastewater generation – before scaling down (m^3/d)	Scaling factor	Total wastewater generation (m^3/d)
Office	70626	14	5045	50	252	0.75	189
Retail	-49859	10	-4986	50	-249	0.75	-187
Leisure	1252	3	417	50	21	0.75	16
Hotel	112077	16	7005	250	1,751	1.0	1,751
Residential care	56734	10	5673	350	1,986	1.0	1,986
Industrial	125597	20	6280	50	314	0.75	235
Suis generis	3679	3	1226	12	15	0.75	11
Community	-537	3	-179	12	-2	0.75	-2
Police station	-10499	28	-375	50	-19	1.0	-19
Library	-1137	6	-190	12	-2	0.75	-2
Prison	-9000	5	-1800	150	-270	1.0	-270
Education	22573	5	4515	50	226	0.75	169
Cattle market	-4773	28	-170	50	-9	0.75	-6
Public house	-720	5	-144	25	-4	0.75	-3
Net change in Showroom and car sales	-1909	47	-41	12	Almost 0	0.75	0
Net change in theatre	955	1	955	12	11	0.75	9
Net change in Depot and Car Park	-30682	19	-1615	12	-19	0.75	-15
Net change in Car Wash	-482	19	-25	100	-3	0.75	-2
Net change in Football types	28442	100	284	12	3	0.75	3
Net change in Hospital types	52232	10	5223	450	2,350	0.75	2,350
Net change in Student accommodation	6035	5	1207	135	163	1.0	163

[17] https://ccpia.org/occupancy-load-signs/

[18] https://www.toshiba-calc.co.uk/vent-rates/Guidance-Tables.pdf

[19] https://www.engineeringtoolbox.com/number-persons-buildings-d_118.html

4.5 Infrastructure Upgrades

4.5.1 TWUL confirmed that it is planning an upgrade for Reading STW. This will improve its ability to treat the volumes of incoming sewage, reducing the need for untreated discharges in wet weather. The scheme, which is still in the design stage, is due to be completed in 2027[20].

4.5.2 TWUL is also investigating the impact of groundwater on the sewer network in the area. This will help inform its long-term planning. TWUL is expecting Reading STW to meet all government targets for storm overflows by 2040-2045.

Thames Water Drainage and Wastewater Management Plan

4.5.3 According to the TWUL Drainage and Wastewater Management Plan and its accompanying Catchment Strategic Plan for West Berkshire, Reading, Wokingham, Bracknell Forest, Windsor, Maidenhead, Hampshire and West Sussex[21], TWUL believe that £2bn needs to be invested in the area to achieve the company's long term ambitious targets by 2050 to mitigate growth and climate change. Over the next 25 years, this budget will be prioritised to invest in both surface water management and network improvements as follows -

- £1.2bn on managing the impact of surface water on the sewerage system including construction of new sewers, sewer upsizing and attenuation storage to provide additional capacity.
- £258m on improvements to surface water management, with a particular focus on removing surface water from impacting on the networks.
- £47m on individual property level protection.
- £172m upgrading 55 STWs, and,
- £265m on sewer lining.

4.5.4 Specifically for Reading STW, for short-term (2025-2030), medium-term (2030-2035) and long-term (2035-2050), TWUL is seeking to:

- Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100%.
- Reduce storm discharges (where overflows are present) to <10 in average by 2050
- Achieve 100% STW permit compliance.

4.5.5 The way that TWUL is planning to achieve the targets above is indicated in **Table 4.4**.

[20] https://www.thameswater.co.uk/about-us/performance/river-health/frequently-asked-questions/information-about-specific-sites#r

[21] https://www.thameswater.co.uk/media-library/home/about-us/regulation/drainage-and-wastewater/west-berkshire-catchment-strategic-plan.pdf

Table 4.4: Reading STW Catchment Proposals

Timescale	Proposed TWUL action plan
Short-term (2025-2030)	• Increase the confidence in the plans for long-term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment-level planning of surface water management solutions. • Provide sewer network improvements to meet growth and climate change drivers.
Medium-term (2030-2035)	• Further develop catchment-level planning to reduce the risk of hydraulic sewer flooding by removing rainfall runoff that is entering the foul sewer system and enhance the surface water sewerage systems. • Invest in the sewage treatment works to ensure compliance.
Long-term (2035-2050)	• Improve the resilience of the sewers at greatest risk of groundwater inflows by undertaking sewer lining works • Reduce the risk of hydraulic sewer flooding by removing surface water from the foul sewer systems through the implementation of surface water management solutions. • Implement property level protection measures. • Continue to provide sewer network improvements. • Continue to invest in the sewage treatment works to ensure compliance.

4.6 New Wastewater Treatment Infrastructure

4.6.1 If existing wastewater treatment works did not have sufficient capacity for additional development, or where connection to treatment works is not feasible, it may be possible to construct new treatment works to support new development. These could be constructed by TWUL on the mains sewer system, or by private operators for properties not connected to the mains sewer (e.g. septic tanks, cesspits and small sewage treatment plants).

4.6.2 New treatment works must be approved by the local planning authority, building regulations, and the EA (depending on size, location and discharge point). The risk of flooding and odour impacts must also be taken into account when planning new treatment works. The EA would be responsible for setting environmental permits on discharge volume and quality to prevent any detrimental impacts on receiving watercourses.

4.6.3 New treatment works could utilise new green / natural treatment options such as constructed wetlands, with additional biodiversity, low energy and low carbon benefits. The feasibility of these will be dependent on location and site constraints. An example of such a site is at Ingoldisthorpe[22] in West Norfolk.

[22] https://www.anglianwater.co.uk/environment/river-health/river-biodiversity/wetlands/

Figure 4.3: Ingoldishthorpe Wetland in Norfolk (Source: BBC[23], Anglian Water)

Ingoldisthorpe Wetland in Norfolk was created by Anglian Water as part of a test project

4.6.4 There may also be opportunities for new treatment works to re-use treated effluent for other purposes, such as irrigation. Treated effluent could be used for potable supplies, subject to quality standards and infrastructure.

4.6.5 Wastewater infrastructure can also be linked to energy generation, through biogas, and the residual heat in the treated effluent can also be re-used. For example, in Norwich and Bury St Edmunds, heat from wastewater treatment plants run by Anglian Water has been used to heat innovative greenhouse developments for hydroponics vertical growing systems

[23] https://www.bbc.com/news/uk-england-suffolk-61805982

5 Environmental Capacity

5.1 Overview

5.1.1 This section will:

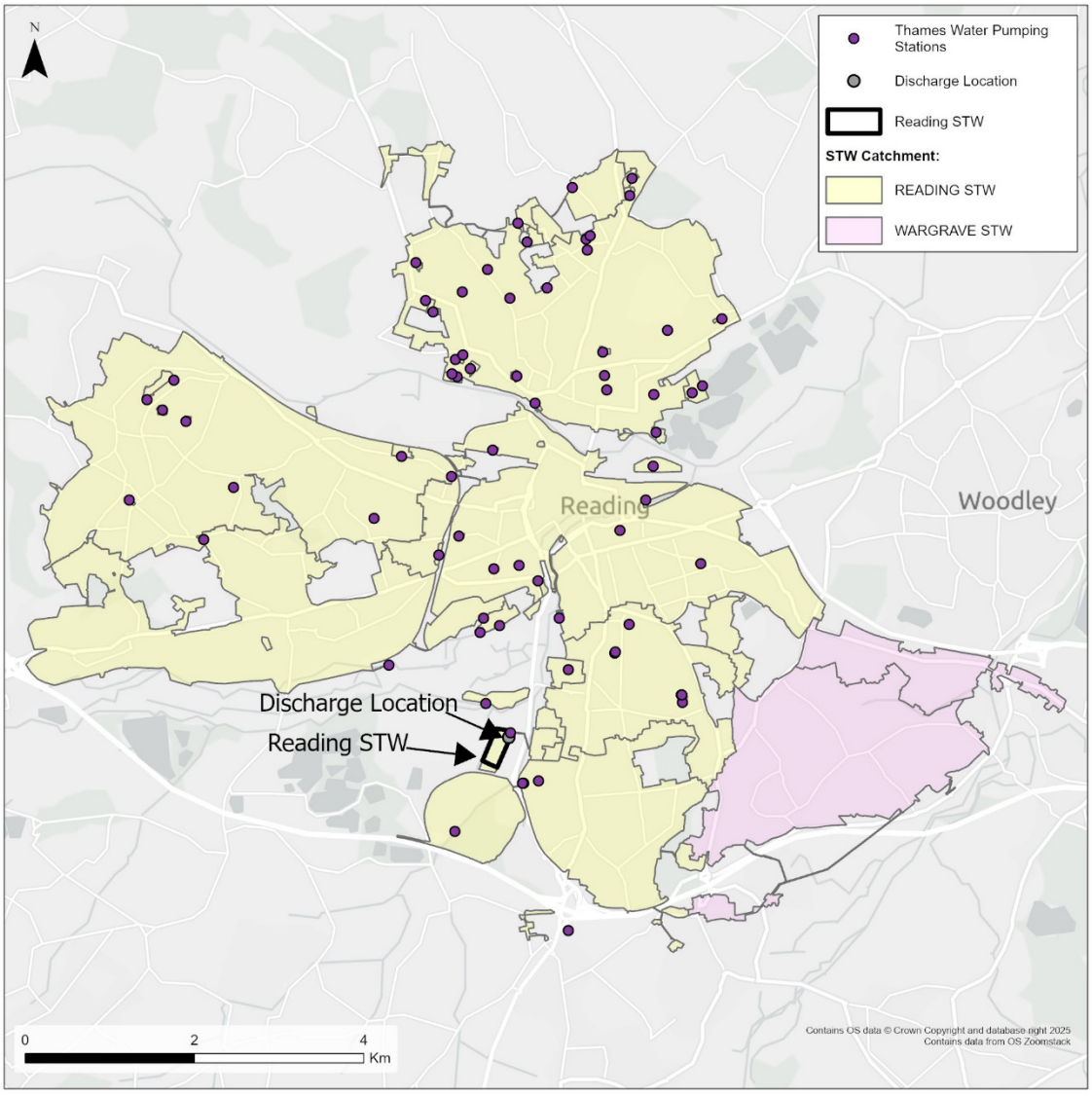
- Review current water quality and WFD status, using the available information, and,
- Identify existing sources of pollution that may affect water quality, including land use, land management activities and point discharges.

5.2 WFD Water Body and Classification

5.2.1 The receiving watercourse for the final effluent from Reading STW is the Foudry Brook (West End Brook to M4), which in turn discharges in the River Kennet.

5.2.2 **Figure 5.1** indicates the point of discharge into the Foudry Brook.

Figure 5.1: Catchment areas, Sewage Pumping Stations and Discharge Location



5.2.3 As part of the WFD assessment, in order to achieve 'Good' status or potential, every element assessed must be at 'Good' status or better. Definitions of the status classes are provided in **Table 5.1**.

Table 5.1: WFD Status Definitions for Surface Water Bodies[24]

Status	Definition
High	*"Near natural conditions. No restriction on the beneficial uses of the water body. No impacts on amenity, wildlife or fisheries."*
Good	*"Slight change from natural conditions as a result of human activity. No restriction on the beneficial uses of the water body. No impact on amenity or fisheries. Protects all but the most sensitive wildlife."*
Moderate	*"Moderate change from natural conditions as a result of human activity. Some restriction on the beneficial uses of the water body. No impact on amenity. Some impact on wildlife and fisheries."*
Poor	*"Major change from natural conditions as a result of human activity. Some restrictions on the beneficial uses of the water body. Some impact on amenity. Moderate impact on wildlife and fisheries."*
Bad	*"Severe change from natural conditions as a result of human activity. Significant restrictions on the beneficial uses of the water body. Major impact on amenity. Major impact on wildlife and fisheries with many species not present."*

5.2.4 The Current (2022) status classification for surface water bodies in Reading are shown in **Table 5.2** and **Figure 5.2**.

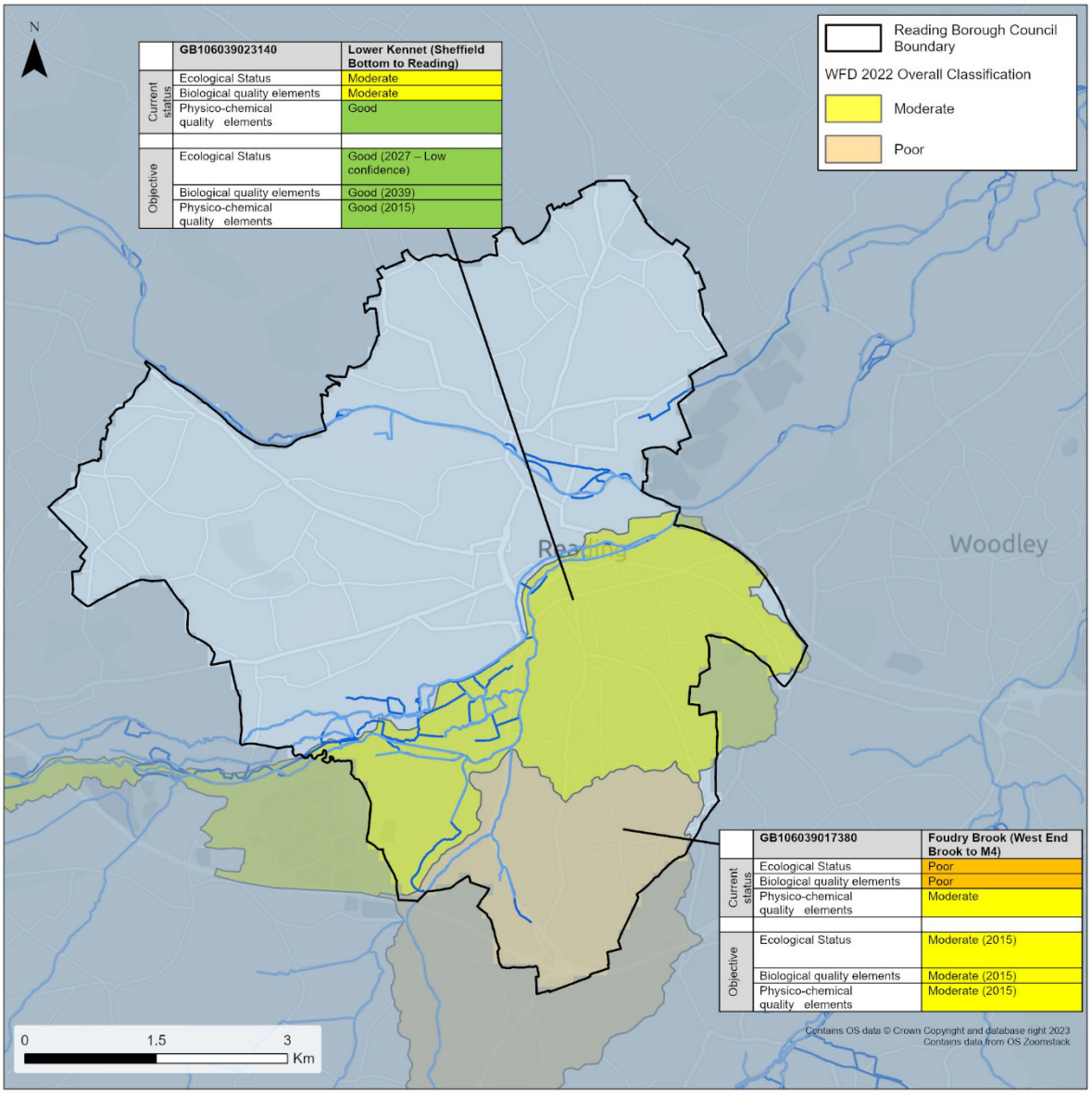
5.2.5 **Table 5.2** also presents a comparison between the 2019 Overall Ecological Status and the 2022 Overall Ecological Status. There is no change in the status classification in either of the surface water bodies presented between the 2019 and the 2022 classifications.

[24] https://environment.data.gov.uk/catchment-planning/help/usage

Table 5.2: Ecological and Physico-chemical Status and Objectives[2] for Surface Water Bodies

Surface Water Body	ID	Cycle 2 Status (2019)	Cycle 3 Current Status (2022)			Reasons for Not achieving Good Status (RNAG)	Objectives			
		Overall Ecological status	Overall Ecological status	Biological quality elements	Physico-chemical quality elements		Ecological status	Biological quality elements	Physico-chemical quality elements	Reasons for alternative objectives
Foudry Brook (West End Brook to M4)	GB10603 9017380	Poor	Poor	Poor	Moderate	Point source / Sewage Discharge (continuous/intermittent) Impacts on:Macrophytes and Phytobenthos Combined Point source / Sewage Discharge (continuous/intermittent) Impacts on: Phosphate Physical modification: Barriers - ecological discontinuity / Agriculture and land management Impacts on: Fish Physical modification / urbanisation – urban development Impacts on: Fish	Moderate (2015)	Moderate (2015)	Moderate (2015)	Disproportionately expensive: Disproportionate burdens; Technically infeasible: No known technical solution is available
Kennet and Holy Brook (in the EA's catchment explorer referred to as Lower Kennet (Sheffield Bottom to Reading) Water Body	GB10603 9023140	Moderate	Moderate	Moderate	Good	Physical modification / Barriers – ecological discontinuity and Land drainage Impacts on: Fish Physical modification / Recreation	Good (2027 – Low confidence)	Good (2039)	Good (2015)	Disproportionately expensive: Disproportionate burdens; Natural conditions: Ecological recovery time; Technically infeasible: Practical technical constraints prevent implementation of the measure by an earlier deadline

Figure 5.2: Ecological and Physico-chemical Status and Objectives[2] for Surface Water Bodies



5.2.6 Of the two water bodies assessed, only the Current Status of **Foudry Brook (West End Brook to M4)** is classified as 'Poor'. This is due to:

- 'Poor' biological quality elements (fish) and
- 'Poor' Phosphate status.

The 'Reasons for Not Achieving Good' (RNAG) status include:

- Point source (continuous and intermittent sewage discharges) impacting Macrophytes and Phytobenthos Combined and Phosphate levels
- Physical modification (ecological discontinuity attributed to agriculture and rural land management) impacting fish and;
- Physical modification due to urban development) also impacting fish.

5.2.7 The Current Overall Status of **Kennet and Holy Brook** is classified as 'Moderate', due to:

- 'Moderate' biological quality elements (fish and macrophytes sub-element), and,
- Moderate supporting elements (surface water).

5.2.8 The RNAG status includes:

- Physical modification (ecological discontinuity and drainage), attributed to agriculture and rural management and having an impact on fish, and,
- Physical modification attributed to recreation.

5.3 Water Quality Management Objectives and Measures

5.3.1 Objectives and measures for managing water quality in Reading are set out in the Thames RBMP (2022). Updates to these are available via the EA's Catchment Data Explorer[2].

5.3.2 The environmental objectives of the WFD are:

- To prevent deterioration of the status of surface waters and groundwater.
- To achieve the objectives and standards for protected areas.
- To aim to achieve good status for all water bodies, or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status.
- To reverse any significant and sustained upward trends in pollutant concentrations in groundwater.
- To cease discharges, emissions and losses of priority hazardous substances into surface waters.
- To progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.

5.3.3 Environmental objectives were set for each water body in the 2022 Thames RBMP. These objectives are legally binding and all public bodies must have regard to these objectives when making decisions that could affect the quality of the water environment. In certain specific circumstances, exemptions from some of the objectives may be applied.

5.3.4 The objectives (i.e. the planned status of each water body that must be achieved or maintained) for the water bodies in the Reading area were updated following the Cycle 3 2022 classifications and are listed in **Table 5.2**.

5.3.5 For surface water bodies, the objectives consist of two pieces of information: (i) the status and (ii) the date by which that status is planned to be achieved.

5.3.6 The status part of an objective is based on a prediction of the future status that would be achieved if technically feasible measures are implemented and, when implemented, would produce more benefits than they cost. The objective also takes into account the requirement to prevent deterioration and achieving protected area objectives.

5.3.7 The date part of an objective is the year by which the future status is predicted to be achieved. The date is determined by considering whether the measures needed to achieve the planned status are currently affordable, and once implemented, the time taken for the ecology or the groundwater to recover.

5.3.8 The water body objectives, relevant to this study, are:

- **'x' status by 2015:** 2015 status matches the predicted future status or potential. Here the predicted future status has already been achieved and no further improvement in status is expected. The main environmental objective is to prevent deterioration in status between 2015 and 2021.

- **'x' status by 2027:** the deadline for achieving the status or potential has been extended to 2027. Where the time extension is due to ecological or groundwater recovery time, there is confidence that the measures needed to achieve the improvement in status are already in place or will be in place by 2021. Where the time extension is due to practical constraints delaying implementation of the measures, there is confidence the process of implementing the measures will begin before 2021. For the remaining objectives with a 2027 date, there is currently not enough confidence that the improvement in status can be achieved by an earlier date.

- **'x' status by 2040 / 2050 / 2060:** the deadlines for achieving the planned status or potential have only been extended beyond 2027 where either ecological recovery time or groundwater recovery time will delay the achieving of the planned status. In these cases there is confidence that the measures needed to achieve the improvement in status are already in place or will be in place by 2021.

5.3.9 Where the status is less than good, this means that a less stringent objective has been set.

5.3.10 As shown in **Table 5.2**, **Kennet and Holy Brook** should meet its 'Good' standard by 2027. The reasons behind the 'Good' status objective being delayed to 2027 include disproportionate costs and burdens, ecological recover time delaying the achievement of the planned status and further practical technical constraints.

5.3.11 For **Foudry Brook**, whose Current Overall status is shown as 'Poor', its objective is set to 'Moderate' by 2015. The reasons behind the 'Moderate' objective are disproportionate costs and no technical solutions being available.

5.4 Measures to Implement Objectives

5.4.1 Measures to implement objectives include:

- **Water company investment programmes:** Water Industry National Environment Programme (WINEP)[25] is a programme of investigations and actions for environmental improvement schemes that allow water companies to meet European Directives, national targets and statutory obligations. The most recent WINEP programme for Reading is listed in **Table 5.3.**

- **National Highways environment fund** This fund invests in environmental improvements including reducing pollution from major highways run-off, for example by retrofitting Sustainable Drainage Systems (SuDS). No information is currently available on recent or future schemes in Reading.

- **Flood risk management investment programme.** The EA's Flood and Coastal Erosion Risk Management (FCERM) scheme invests in capital works to reduce the risk of flooding and erosion. Some of these schemes may also contribute towards improving the status of water bodies.

[25] https://www.gov.uk/government/publications/developing-the-environmental-resilience-and-flood-risk-actions-for-the-price-review-2024/water-industry-national-environment-programme-winep-methodology

Table 5.3: WINEP Statutory Obligations and Regulatory Actions for TWUL relating to Actions and Investigations for Water Quality

Action Type	Location	Water body	Primary Driver
Long Term Monitoring	Reading STW	Foudry Brook (West End Brook to M4)	U_MON3: Install Event Duration Monitoring (EDM) on STW overflows to storm tanks at those STW where we can't use existing monitors to be confident that the permitted Flow to Full Treatment (FFT) setting is being complied with.
Investigation			U_INV2: Investigation to confirm if any existing from and flow monitor or the back and Monitor Certification Scheme (MCERTS) flow monitor can be used to measure PFF to full treatment at STW. Existing from end monitors must be considered first and where they can be MCERTS certified to measure Pass Forward Flow (PFF) they should be used to provide data within AMP7. Where there is not front-end monitor or cannot be MCERTS certified, investigate whether the back end flow monitor can be MCERTS certified to measure PFF. If can, then use it to provide data within AMP7. If neither can be MCERTS certified, then a new inlet MCERTS flow monitor will be required under a PR24 driver.
Long Term Monitoring			WFD_MON_CHEM: Trend monitoring - A new obligation related to the proposed chemical strategy which is currently being developed with DEFRA and new permitting methods for the control of hazardous pollutants that will monitor the effectiveness of source control and other measures to an extent that ensures we have sufficient confidence in the data for our own understanding and for EU reporting. The sites and substances that will be subject to trend monitoring will be determined nationally.
Investigation			WFD_INV_CHEM14: Investigations – Monitoring of chemical removal by installed technologies.
Action to prevent deterioration			WFD_NDLS_Chem2: Measures related to load standstill requirements for chemicals (below Environmental Quality Standards (EQS)). These are set where a STW is discharging significant concentrations for a chemical, but the EQS is not threatened. Targets are set to ensure that current effluent quality does not deteriorate.

5.5 Water Quality Sampling

5.5.1 TWUL has provided records from 2014 to 2024 for Ammoniacal Nitrogen and Phosphorus Total by ICP[26]. Records of Biochemical Oxygen Demand (BOD) and Suspended Solids (SS) have been extracted from the EA Water Quality Archive Portal[27] for the Reading STW sampling point.

[26] ICP: Inductively Coupled Plasma

[27] https://environment.data.gov.uk/water-quality

5.5.2 The quality limits set by the EA for pollutant loads for Reading STW to discharge treated wastewater into the Foudry Brook are:

- 2 mg/l for Ammonia
- 1 mg/l for Total Phosphorus
- 5 mg/l for BOD and
- 30 mg/l for SS.

5.5.3 The average values for each determinant between 2014 and 2024 are shown in **Table 5.4**.

Table 5.4: Determinants' Quality Limits and Measured Annual Average Determinant values for Reading STW

Determinant	Ammonia (mg/l)	Phosphorus Total by ICP (mg/l)	BOD (mg/l)	Suspended Solids (mg/l)
Period:	09/07/2014 to 16/07/2024	09/07/2014 to 03/07/2024	01/01/2014 to 16/07/2024	01/01/2014 to 16/07/2024
Consent	**2**	**1**	**5**	**30**
2014	0.26	0.81	2.40	5.08
2015	0.22	0.65	2.63	5.83
2016	0.05	0.54	3.07	5.81
2017	0.07	0.65	2.88	6.49
2018	0.17	0.67	2.40	6.12
2019	0.15	0.52	2.58	4.83
2020	0.08	0.77	2.88	5.12
2021	0.06	0.80	3.47	8.35
2022	0.08	0.72	3.33	5.37
2023	0.37	0.71	4.56	9.42
2024	0.14	0.24	3.50	5.52

5.5.4 The average annual concentration levels for each determinant are all below the limits set by the EA.

5.5.5 With the projected growth in RBC, it is likely that the discharge levels will increase. Therefore, mitigation measures can be implemented if required to ensure that these limits will not be exceeded.

5.6 Impacts of Development on Water Quality

5.6.1 The information reviewed above indicates that both water bodies in Reading are currently failing to meet 'Good' water quality standards; their overall quality is either classified as 'Moderate' or 'Poor'. ***To meet legislative requirements, it will be necessary for the new Local Plan to demonstrate that it will not contribute to any deterioration in WFD status, and where possible, that it will support measures to implement objectives for each water body.***

5.6.2 Development can detrimentally impact water quality by:

- **Increasing the volume in wastewater requiring treatment and discharge to surface waters**. This can increase the levels of phosphorus, ammonia and organic matter in receiving watercourses.

- **Increasing pollutants in surface water runoff from development surfaces**, including roads and pavements. Rainwater draining from development roads and pavements can carry many pollutants, including metals, vehicle emissions, slat, grid, oil, microplastics and household chemicals.

5.6.3 These impacts and possible mitigation options are considered further below in this Section. Well-designed developments can provide opportunities for betterment, by removing land from intensive agricultural usage and providing green-blue infrastructure to control urban sources of pollution.

Increases in volume of wastewater due to additional growth and development

5.6.4 Wastewater can contain nutrients, such as phosphorus and nitrates, harmful chemicals, including ammonia and metals, and other harmful substances, including viruses and bacteria. Increased volumes of wastewater, without mitigation, can lead to increases in both concentration and total loading of pollutants entering watercourses from treated effluent, and an increased frequency and /or duration of sewer storm overflows.

5.6.5 The concentration and total load of pollutants in treated effluent is managed through permits. For the purposes of this, where there is existing headroom between current discharges and the permitted level, development could lead to a detrimental impact on water quality as there would be no requirement to mitigate the increase in pollutants if it remained below the permitted level. The EA is responsible for setting and reviewing permitted levels. In case it is appropriate, a load standstill approach can be applied to approximate permit revisions which prevent increases in pollutants due to increased wastewater.

5.6.6 When wastewater volumes increase there is less capacity to carry stormwater in combined sewers, which may result in increased frequency and volume of storm overflows spills. The effect can be heightened if paved areas increase (e.g. paving over of gardens) and/or climate change increases the frequency of heavy rainfall. The combined effect of these influences is hard to predict without use of sewer network hydraulic models. As described in **Section 4.5**, TWUL in its DWMP published in 2023, aims to mitigate these effects and further reduce the occurrence of storm overflows, by improving the sewer network.

5.6.7 It should be noted that water quality modelling (e.g. SAGIS modelling) should be undertaken to assess any resulting impact of the proposed growth on the WFD waterbody status (i.e. that the waterbody status will not deteriorate as a result of growth). The modelling should also assess the impact of growth on the waterbody objective (i.e. that growth will not prevent the waterbody from reaching its statutory objective).

Increases in Surface Water Runoff Pollutants

5.6.8 Development can lead to a decrease in the quality of surface water run-off, due to the introduction of pollutants from roads, pavements and other surfaces, and due to mis-use of the surface water drainage network (e.g. misconnections and illegal disposal of chemicals). Microplastics are a pollutant of increasing concern which travel to the oceans via surface runoff and rivers.

5.6.9 In new developments, SuDS should be used to provide treatment to water quality, as well as reducing flood risk downstream. Where SuDS include blue-green infrastructure (ponds, swales green roofs, buffer strips etc.) they also deliver valuable wider benefits in terms of improved biodiversity and protection from summer temperature extremes.

In existing developments, reducing pollution can be complex, with the cost of measures often high and ownership of the problem unclear. Regeneration schemes should be used to incorporate blue infrastructure and SuDS that rectify any misconnections, reduce burdens on combined sewer systems, and provide water quality improvements for surface water drainage. Local Plan policies and the LLFA should support these schemes.

6 Major Development Site Assessment

6.1 Overview

6.1.1 The wastewater strategy to cater for growth requires an assessment of the capacity of the wastewater network to accept and transmit wastewater flows, from new development to the Reading STW.

6.1.2 The capacity of the existing sewer network is an important consideration for growth as, in some cases, the existing system is already at or over its design capacity. Further additions of wastewater from growth can result in sewer flooding in the system (affecting property or infrastructure) or can increase the frequency with which overflows to river systems occur, resulting in ecological impact and deterioration in water quality.

6.1.3 As the wastewater undertaker for the Reading area, TWUL has a general duty under Section 94 of the Water Industry Act 1991 to provide effectual drainage, which includes providing additional capacity as and when required to accommodate planned development. However, this legal requirement must also be balanced with the price controls as set by the regulatory body Ofwat which must ensure TWUL has sufficient funds to finance its functions, while at the same time protect consumers' interests. The price controls affect the bills that customers pay and the sewerage services consumers receive, and ultimately ensure wastewater assets are managed and delivered efficiently.

6.2 Wastewater Network Assessment

6.2.1 TWUL has undertaken a Red-Amber-Green (RAG) assessment of the foul sewer network capacity, as well as the water supply connection capacity, using local operational knowledge. The key indicating the coding applied to the RAG assessments is provided in **Table 6.1**.

Table 6.1: RAG Assessment Key

No capacity concerns
Modelling **may be required** to understand the impact of development
It is likely modelling **will be required** to understand the impact of development

6.2.2 Where development proposals are likely to require additional capacity upgrades to accommodate new development flows, it is recommended that developers contact TWUL as early as possible to confirm flow rates and intended connection points. This will ensure the provision of additional capacity is planned into TWUL's investment programme to avoid development being delayed.

6.2.3 **Table 6.2** illustrates the RAG assessment as provided by TWUL. TWUL noted that this is a very-high level desk-based assessment, treating each individual site on its own merit. Out of the 70 sites assessed, 29 of them would likely require modelling to understand the impact of development and, for only one of them, modelling may be required to understand the impact of development. For the remaining 39 sites, there are no wastewater capacity concerns.

Table 6.2: Site Assessment Table Summary

Site ID	Site Name	2024 network comments (Waste) RAG	2024 network Comments (Water) RAG	Area	Development Type
49960	CA1f Land rear of 1&3 Woodcote Road & 21 St Peter's Hill, Reading (A26)			North	Allocation, no permission
48240	ER1e St Patricks Hall 20 Northcourt Avenue Reading RG2 7HB			East	Allocation, no permission
55142	SR4b Rear of 3-29 Newcastle Road			South	Allocation, no permission
49963	SR1c Island Road, Longwater Avenue, A33 Frontage			South	Allocation, no permission
49966	SR1a, Former Landfill, Island Road			South	Allocation, no permission
55166	ER1k 131 Wokingham Road			East	Allocation, no permission
55162	ER1f Hamilton Centre, Bulmershe Road			No information provided	
55160	ER1a The Woodley Arms PH, Waldeck Street			East	Permitted, under construction
55145	SR4f Land South West of Junction 11 of the M4	No figures provided so unable to provide comment in capacity		No information provided	

Site ID	Site Name	2024 network comments (Waste) RAG	2024 network Comments (Water) RAG	Area	Development Type
50016	SR2 Land north of Manor Farm Road, Reading (B39)			South	Allocation, no permission
55135	SR3 South of Elgar Road Major Opportunity Area			South	Allocation, no permission
55143	SR4C 169-173 Basingstoke Road			South	Allocation, no permission
49962	SR4d 16-18 Bennet Road, Reading (A28)			South	Allocation, no permission
35248	SR1b Land North of Island Road Reading RG2 0WR			No information provided	
49948	CA1a Reading University Boat Club, Promenade Road, Reading (A13)			North	Allocation, no permission
1447	CA1c Land at Lowfield Road, Reading (B51)			North	Allocation, no permission
49953	CA1d Rear of 200-214 Henley Road, 12-24 All Hallows Road & 7 & 8 Copse Avenue, Reading (A20)			North	Allocation, no permission
49955	CA1e Rear of 13-14a Hawthorne Road & 282-292 Henley Road,			North	Allocation, no permission

Site ID	Site Name	2024 network comments (Waste) RAG	2024 network Comments (Water) RAG	Area	Development Type
	Reading (A21)				
21925	CA1B Part of Reading Golf Course Kidmore End Road (A19)			North	Permitted, under construction
49983	CR12e Hosier Street, Reading (B12)			Central	Allocation, no permission
49967	CR11a Friar Street & Station Road Reading (B1)			Central	Allocation, no permission
49969	CR11b Greyfriars Road Corner, Reading. (B2)			Central	Allocation, no permission
49970	CR11c, Station Hill, Reading.			Central	Permitted in hybrid, partly under construction
49936	CR11d Brunel Arcade and Apex Plaza Reading (A1)			Central	Allocation, no permission
49984	CR13a Reading Prison (B13)			Central	Allocation, no permission
49985	CR13b Forbury Retail Park (B14)			Central	Allocation, no permission
49942	CR14d 173 - 175 Friar Street and 27-32, Reading (A6)			Central	Permitted, not started
49996	CR14e 3-10 Market Place, Abbey Hall & Abbey Square, Reading (B22)			No information provided	
55138	CR14f 1-5 King Street			No information provided	

Site ID	Site Name	2024 network comments (Waste) RAG	2024 network Comments (Water) RAG	Area	Development Type
20122	CR13c Kenavon Drive, Reading, (B15)			Central	Permitted, under construction
49973	CR11e North of the Station, Reading. (B4)			Central	Allocation, partly permitted
55129	CR11F: West of Caversham Road			Central	Allocation, no permission
49975	CR11g Riverside, Reading. (B5)			Central	Allocation, no permission
21922	CR11i Napier Court Napier Road Reading (B7)			Central	Allocation, no permission
50013	CR14m Caversham Lock Island, Reading (B33)			No information provided	
50002	CR14g The Oracle Extension, Bridge Street & Letcombe Street, Reading. (B26)			No information provided	
55139	CR14h Central Club, London Street			Central	Permitted, not started
50006	CR14j Corner of Crown Street & Southampton Street, Reading. (B28)			Central	Allocation, no permission
52315	CR14l 187-189 & 191 Kings Road Reading RG1 4EX			Central	Allocation, no permission
21816	ER1i 261-275 London Road Reading (B34)			East	Allocation, no permission

Site ID	Site Name	2024 network comments (Waste) RAG	2024 network Comments (Water) RAG	Area	Development Type
55140	CR14i Enterprise House, 89-97 London Street			Central	Allocation, no permission
55141	SR4a Pulleyn Park, Rose Kiln Lane			South	Allocation, no permission
55137	CR14c 17 -23 Queen Victoria Street			No information provided	
48389	ER1b 3 - 5 Craven Road, Reading, RG1 5LF			East	Allocation, no permission
49956	ER1c Rear of 8-26 Redlands Road, Reading (A22)			East	Allocation, no permission
49957	ER1d Land adjacent to 40 Redlands Road, Reading (A23)			East	Allocation, no permission
49982	CR12a,Cattle Market, Reading (B8)			Central	Allocation, no permission
55130	CR12d, Broad Street Mall			Central	Permitted, not started
55136	CR14a Central Swimming Pool, Battle Street			No information provided	
49990	CR14b Former Reading Family Centre, North Street (B19)			No information provided	
20333	WR3G 211 - 221 Oxford Road & 10 & rear of 8 Prospect Road Reading (B41)			West	Allocation, no permission

Site ID	Site Name	2024 network comments (Waste) RAG	2024 network Comments (Water) RAG	Area	Development Type
21919	WR3h Rear of 303-315 Oxford Road Reading (B42)			West	Resolution to grant
49987	CR12c, Chatham Street Reading (B17)			Central	Allocation, no permission
55146	WR3b 2 Ross Road & Part of Meadow Road			West	Allocation, no permission
55147	WR3c 28-30 Richfield Avenue			No information provided	
55150	WR3j Land at Moulsford Mews			No information provided	
55148	WR3e Yeomanry House, Castle Hill			No information provided	
55149	WR3f 4 Berkeley Avenue			West	Allocation, no permission
21818	WR3p The Alice Burrows Home, Dwyer Road Reading (B45)			West	Permitted, not started
55153	WR3N Amethyst Lane			West	Permitted, not started
34352	WR3o Meadway Centre, Reading, RG30 (B50)			No information provided	
13129	WR1 Dee Park Estate, Tilehurst, Reading (B49)			West	Phase 3 permitted, not started
55152	WR3m 103 Dee Road			West	Permitted, under construction
34626	WR3K 784-794 Oxford Road Reading RG30 1EL (B47)			West	Allocation, no permission

Site ID	Site Name	2024 network comments (Waste) RAG	2024 network Comments (Water) RAG	Area	Development Type
55151	WR3L 816 Oxford Road			West	Allocation, no permission
55154	WR3q Norcott Community Centre, Lyndhurst Road			No information provided	
28523	WR3r Charters Car Sales, OXFORD ROAD, READING			West	Allocation, no permission
50018	WR2: Park Lane Primary School, The Laurels & Downing Road, Tilehurst, Reading (B46)			No information provided	
55155	WR3s Land at Kentwood Hill			West	Allocation, no permission
55156	WR3t Land at Armour Hill			West	Allocation, no permission

7 Summary and Conclusions

7.1 Scope

7.1.1 This Water Quality Assessment (WQA) Update study supports the Reading Local Plan Partial Update in order to demonstrate that key parts of the Plan are as up to date as possible. This is necessary because Reading Borough Council (RBC) is anticipated to experience further growth over the period 2023-2041. This growth represents a challenge in understanding whether wastewater infrastructure has the capacity to sustain the level of growth and development proposed.

7.1.2 The WQA Update study has:

- Reviewed the relevant planning policy and the Water Framework Directive (WFD);
- Detailed the Local Plan delivery and the proposed growth within the Borough;
- Reviewed the wastewater infrastructure in the area and, finally,
- Assessed the environmental capacity of the receiving water bodies.

7.2 Proposed Growth

7.2.1 The projected housing growth for Reading Borough between 2023 and 2041 is for the provision of 15,386 additional homes. It is also projected that, during the same period, the net change in non-residential floorspaces would be +370,604 sqm.

7.3 Infrastructure Capacity

Existing and Future Wastewater Treatment Capacity

7.3.1 Reading Sewage Treatment Works (STW) - the only STW serving the Borough - is currently using almost all (97%) of its volumetric permit.

7.3.2 It has been calculated that by 2041 - considering the projected residential and non-residential growth and based on the assumptions made in the **Chapter 4** of this report - Reading STW would exceed its volumetric permit capacity. This indicates that Reading STW will not be able to serve the proposed development, shown in **Section 3**, before any upgrade takes place.

Infrastructure Upgrades

7.3.3 Thames Water Utilities Ltd (TWUL) confirmed that it is planning an upgrade for Reading STW. This will improve its ability to treat the volumes of incoming sewage, thereby reducing the need for untreated discharges in wet weather. The scheme, which is still in the design stage, is due to be completed in 2027.

7.3.4 TWUL Drainage and Wastewater Management Plan (DWMP) and its accompanying Catchment Strategic Plan for Oxfordshire, Swindon, Wiltshire, Gloucestershire and Warwickshire, indicate that throughout the period 2025-2050 (which covers the new Local Plan period), TWUL is seeking to:

- Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100%.
- Reduce storm discharges (where overflows are present) to <10 in average by 2050 and

- Achieve 100% STW permit compliance.

Further Recommendations

7.3.5 It is recommended that RBC continue to update TWUL on future development and changes to growth allocation to ensure that plans for any STW upgrades in Reading STW, in response to permit change requirement or flow capacity constraints, take into account the most up to date planning position. This will ensure that capacity is not used up by other developments within the Reading STW catchment.

7.3.6 New development could be supported by new green/natural treatment options, such as constructed wetlands, at the existing Reading STW (or in potential future new STWs), with additional low energy and low carbon benefits. The feasibility of these will be dependent on location and site constraints.

7.3.7 Treated effluent could be used for irrigation, allowing potable water to be prioritised in abstractions. Treated effluent could also be used for potable supplies subject to quality standards and infrastructure. However, re-use of effluent would require assessment to ensure that watercourses currently receiving treated flow are not detrimentally impacted by reduced river flows below sustainable levels, and public health is not impacted (in the context of using treated effluent in the food chain).

7.4 Environmental Capacity

WFD Classification

7.4.1 There are two surface water bodies in Reading: Foudry Brook (West End Brook to M4) and Kennet and Holy Brook. The receiving watercourse for the final effluent from Reading STW is Foudry Brook, which in turn discharges in the River Kennet.

7.4.2 Both water bodies have been assessed through the WFD, with the most recent WFD status classification available from 2022.

Foudry Brook

7.4.3 The Current Overall Ecological Status of Foudry Brook is classified as ‘Poor’. The reasons behind the ‘Poor’ classification of Foudry Brook include poor biological quality elements (fish) and Poor Phosphate status.

7.4.4 The Reasons for Not Achieving Good (RNAG) status for Foudry Brook include:

- Point source (continuous and intermittent sewage discharges) impacting Macrophytes and Phytobenthos Combined and Phosphate levels
- Physical modification (ecological discontinuity attributed to agriculture and rural land management) impacting fish and;
- Physical modification due to urban development) also impacting fish.

7.4.5 The Objective of Foudry Brook is set to ‘Moderate’ by 2015. The reasons behind the ‘Moderate’ objective are ‘disproportionate costs’ and ‘no technical solutions being available’.

Kennet and Holy Brook

7.4.6 The Current Overall Ecological Status of Kennet and Holy Brook is classified as ‘Moderate’. The water body is classified as having a ‘Moderate’ Status due to:

- ‘Moderate’ biological quality elements (fish and macrophytes sub-element) and
- Moderate supporting elements (surface water).

7.4.7 The RNAG status include:

- Physical modification (ecological discontinuity and drainage), attributed to agriculture and rural management and having an impact on fish and
- Physical modification attributed to recreation.

7.4.8 Kennet and Holy Brook should meet its ‘Good’ standard by 2027. The reasons behind the ‘Good’ status objective being delayed to 2027 include ‘disproportionate costs and burdens’, ‘ecological recover time delaying the achievement of the planned status’ and ‘further practical technical constraints’.

Water Quality Sampling

7.4.9 TWUL has provided records from 2014 to 2024 for Ammoniacal Nitrogen and Phosphorus Total by ICP. Records of BOD and SS have been extracted from the EA Water Quality Archive Portal for the Reading STW sampling point. The average annual concentration levels for each determinant are all below the limits set by the EA.

7.4.10 With the projected growth in RBC, it is likely that the discharge levels will increase; therefore, mitigation measures can be implemented if required to ensure that these limits will not be exceeded.

Further Recommendations

7.4.11 The upcoming upgrades in the Reading STW, which have been confirmed by TWUL and identified in the DWMP, could allow improvements to the quality of Foudry Brook, which is currently not meeting the ‘Good’ standards partly due to point source pollution from sewage treatment.

7.4.12 Water quality modelling (e.g. SAGIS modelling) should be undertaken to assess any resulting impact of the proposed growth on the WFD waterbody status (i.e. that the waterbody status will not deteriorate as a result of growth). The modelling should also assess the impact of growth on the waterbody objective (i.e., that growth will not prevent the waterbody from reaching its statutory objective).

7.4.13 Well-designed green / blue infrastructure would contribute to improved water quality and habitat both within sites and downstream, as well as providing wider benefits for people, wildlife, landscape, and mitigating the potential impacts of climate change.

7.4.14 Although point source pollution managed through permits should not increase, there is a risk of diffuse and point source pollution from other sources increasing due to development, for example highways runoff. Positive countermeasures will be necessary to offset impacts.

7.4.15 The improvements to storm overflows, which have been identified in the TWUL DWMP, may be necessary to offset growth driven more frequent operation. The timing of upgrades will be important to avoid any deterioration in water quality as a result of development.

7.5 Major Development Site Assessment

7.5.1 TWUL has undertaken a Red-Amber-Green (RAG) assessment of the foul sewer network capacity. Where development proposals are likely to require additional capacity upgrades to accommodate new development flows, it is recommended that developers will contact TWUL as early as possible to confirm flow rates and intended connection points. This will ensure the

provision of additional capacity is planned into TWUL's investment programme to ensure development is not delayed.

7.5.2 TWUL noted that this is a very high-level desk-based assessment, treating each individual site on its own merit. Out of the 70 sites assessed, 29 of them would likely modelling to understand the impact of development and for only one of them modelling may be required to understand the impact of development. For the remaining 41 sites, there are no wastewater capacity concerns.

Appendix A

Thames Water letter: Reading Local Plan Partial Update - Consultation on Scope and Content

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Reading Borough Council
Issued via email:
planningpolicy@reading.gov.uk

24 January 2024

Reading Local Plan Partial Update - Consultation on Scope and Content November 2023

Dear Sir/Madam,

Thank you for allowing Thames Water Utilities Ltd (Thames Water) to comment upon the above.

As you will be aware, Thames Water are the statutory water supply and sewerage undertaker for the Reading Borough and are hence a **"specific consultation body"** in accordance with the Town & Country Planning (Local Planning) Regulations 2012.

We have the following comments on the consultation in relation to our water supply and sewerage undertakings and landholdings within the Borough:

Q7: Policy CC2 - Water Efficiency

Policy CC2 in relation to water efficiency is supported in principle, but needs to be strengthened to ensure the water efficiency standard of 110 litres per person per day is met in practice.

The Environment Agency has designated the Thames Water region to be an area of "serious water stress" which reflects the extent to which available water resources are used. Future pressures on water resources will continue to increase and key factors are population growth and climate change. On average our customers each use 30% more water than they did 30 years ago. Therefore water efficiency measures employed in new development are an important tool to help us sustain water supplies for the long term.

Water conservation and climate change is a vitally important issue to the water industry. Not only is it expected to have an impact on the availability of raw water for treatment but also the demand from customers for potable (drinking) water. Therefore, Thames Water support the mains water consumption target of 110 litres per head per day (105 litres per head per day plus an allowance of 5 litres per head per day for gardens) as set out in the NPPG (Paragraph: 014 Reference ID: 56-014-20150327) and support the inclusion of this requirement in Policy.

Thames Water promote water efficiency and have a number of water efficiency campaigns which aim to encourage their customers to save water at local levels. Further details are available on our website via the following link:
https://www.thameswater.co.uk/Be-water-smart

It is our understanding that the water efficiency standards of 110 litres per person per day is only applied through the building regulations where there is a planning condition requiring this standard (as set out at paragraph 2.8 of Part G2 of the Building Regulations). As the Thames Water area is defined as water stressed it is considered that such a condition should be attached as standard to all planning approvals for new residential development in order to help ensure that the standard is effectively delivered through the building regulations. We therefore support Policy DM7 in referring the use of planning conditions. However, clarification should be provided in relation to the preferred 'Fittings Approach'.

Within Part G of Building Regulations, the 110 litres/person/day level can be achieved through either the 'Calculation Method' or the 'Fittings Approach' (Table 2.2). The Fittings Approach provides clear flow-rate and volume performance metrics for each water using device / fitting in new dwellings. Thames Water considers the Fittings Approach, as outlined in Table 2.2 of Part G, increases the confidence that water efficient devices will be installed in the new dwelling. Insight from our smart water metering programme shows that household built to the 110 litres/person/day level using the Calculation Method, did not achieve the intended water performance levels.

We therefore consider that text in line with the following should be included in Core CC2:
"Development must be designed to be water efficient and reduce water consumption. Refurbishments and other non-domestic development will be expected to meet BREEAM water-efficiency credits. Residential development must not exceed a maximum water use of 105 litres per head per day (excluding the allowance of up to 5 litres for external water consumption) using the 'Fittings Approach' in Table 2.2 of Part G of Building Regulations. Planning conditions will be applied to new residential development to ensure that the water efficiency standards are met."

Q82 & 83 - Water Resources and Waste Water Infrastructure

We generally support the reference to water and wastewater infrastructure, but it is such an important issue that it should be covered in a separate 'Water Resources and Wastewater Infrastructure' policy in the new Local Plan and that it should be improved in line with the following detailed comments:

Water and wastewater infrastructure is essential to any development. Failure to ensure that any required upgrades to the infrastructure network are delivered alongside development could result in adverse impacts in the form of internal and external sewer flooding and pollution of land and water courses and/or low water pressure.

A key sustainability objective for the preparation of Local Plans and Neighbourhood Plans should be for new development to be co-ordinated with the infrastructure it demands and to take into account the capacity of existing infrastructure. Paragraph 20 of the revised National Planning Policy Framework (NPPF), 2021, states: "*Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for… infrastructure for waste management, water supply, wastewater*…"

Paragraph 11 states: "*Plans and decisions should apply a presumption in favour of sustainable development. For plan-making this means that:*
a) All plans should promote a sustainable pattern of development that seeks to: meet the

development needs of their area; align growth and infrastructure; improve the environment; mitigate climate change (including by making effective use of land in urban areas) and adapt to its effects"

Paragraph 28 relates to non-strategic policies and states: "*Non-strategic policies should be used by local planning authorities and communities to set out more detailed policies for specific areas, neighbourhoods or types of development. This can include allocating sites, the provision of infrastructure…"*

Paragraph 26 of the revised NPPF goes on to state: "*Effective and on-going joint working between strategic policy-making authorities and relevant bodies is integral to the production of a positively prepared and justified strategy. In particular, joint working should help to determine where additional infrastructure is necessary…."*

The web based National Planning Practice Guidance (NPPG) includes a section on 'water supply, wastewater and water quality' and sets out that Local Plans should be the focus for ensuring that investment plans of water and sewerage/wastewater companies align with development needs. The introduction to this section also sets out that "*Adequate water and wastewater infrastructure is needed to support sustainable development*" (Paragraph: 001, Reference ID: 34-001-
20140306).

It is important to consider the net increase in water and wastewater demand to serve the development and also any impact that developments may have off site, further down the network. The new Local Plan should therefore seek to ensure that there is adequate water and wastewater infrastructure to serve all new developments. Thames Water will work with developers and local authorities to ensure that any necessary infrastructure reinforcement is delivered ahead of the occupation of development. Where there are infrastructure constraints, it is important not to under estimate the time required to deliver necessary infrastructure. For example: local network upgrades take around 18 months and Sewage Treatment & Water Treatment Works upgrades can take 3-5 years.

As from 1st April 2018, the way Thames Water and all other water and wastewater companies charge for new connections has changed. The changes mean that more of Thames Water's charges will be fixed and published, rather than provided on application, enabling you to estimate your costs without needing to contact us. The services affected include new water connections, lateral drain connections, water mains and sewers (requisitions), traffic management costs, income offsetting and infrastructure charges. Paragraph 10.70 should therefore be amended accordingly.

Information on how off site network reinforcement is funded can be found here
https://developers.thameswater.co.uk/New-connection-charging

Thames Water therefore recommends that developers engage with them at the earliest opportunity (in line with paragraph 26 of the revised NPPF) to establish the following:

- The developments demand for water supply and network infrastructure both on and off site;
- The developments demand for Sewage/Wastewater Treatment and network infrastructure both on and off site and can it be met; and
- The surface water drainage requirements and flood risk of the development both on and off site and can it be met.

Thames Water offer a free Pre-Planning service which confirms if capacity exists to serve the

development or if upgrades are required for potable water, waste water and surface water requirements. Details on Thames Water's free pre planning service are available at: https://www.thameswater.co.uk/developers/larger-scale-developments/planning-your-development/water-and-wastewater-capacity

In light of the above comments and Government guidance we consider that the New Local Plan should include a specific policy on the key issue of the provision of 'Water Resources/Supply and Sewerage/Wastewater Infrastructure' to service development. This is necessary because it will not be possible to identify all of the water/sewerage infrastructure required over the plan period due to the way water companies are regulated and plan in 5 year periods (Asset Management Plans or AMPs). We therefore recommend that there is a separate policy to cover both 'Water Resources & Wastewater Infrastructure'.

PROPOSED WATER SUPPLY/WASTEWATER INFRASTRUCTURE POLICY TEXT:
"Where appropriate, planning permission for developments which result in the need for off-site upgrades, will be subject to conditions to ensure the occupation is aligned with the delivery of necessary infrastructure upgrades."
"The Local Planning Authority will seek to ensure that there is adequate water and wastewater infrastructure to serve all new developments. Developers are encouraged to contact the water/waste water company as early as possible to discuss their development proposals and intended delivery programme to assist with identifying any potential water and wastewater network reinforcement requirements. Where there is a capacity constraint the Local Planning Authority will, where appropriate, apply phasing conditions to any approval to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of the relevant phase of development."

Local Authorities should also consider both the requirements of the utilities for land to enable them to meet the demands that will be placed upon them. This is necessary because it will not be possible to identify all the water and wastewater/sewerage infrastructure required over the plan period due to the way water companies are regulated and plan in 5 year periods (AMPs). Thames Water are currently in AMP7 which covers the period from 1st April 2020 to 31st March 2025. AMP8 will cover the period from 1st April 2025 to 31st March 2030. The Price Review, whereby the water companies' AMP8 Business Plan will be agreed with Ofwat during 2024.

Hence, a further text should be added to Policy as follows:
"*The development or expansion of water supply or waste water facilities will normally be permitted, either where needed to serve existing or proposed development in accordance with the provisions of the Development Plan, or in the interests of long term water supply and waste water management, provided that the need for such facilities outweighs any adverse land use or environmental impact that any such adverse impact is minimised*."

Development within the vicinity of Sewage Treatment Works and Sewage Pumping Stations
The new Local Plan should assess impact of any development within the vicinity of existing sewage works/sewage pumping stations in line with the Agent of Change principle set out in the NPPF, paragraph 187.

Where development is being proposed within 800m of a sewage treatment works or 15m of a sewage pumping station, the developer or local authority should liaise with Thames Water to consider whether an odour impact assessment is required as part of the promotion of the site and potential planning application submission. The odour impact assessment would determine whether the proposed development would result in adverse amenity impact for new occupiers,

as those new occupiers would be located in closer proximity to a sewage treatment works/pumping station.

Paragraph 174 of the NPPF, February 2021, sets out that: "*Planning policies and decisions should contribute to and enhance the natural and local environment by: ….e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans…"*

Paragraph 185 goes on to state: "*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development…."*

The online PPG states at Paragraph: 005 Reference ID: 34-005-20140306 that: "*Plan-making may need to consider: ….whether new development is appropriate near to sites used (or proposed) for water and wastewater infrastructure (for example, odour may be a concern).."*

The odour impact study would establish whether new resident's amenity will be adversely affected by the sewage works and it would set the evidence to establish an appropriate amenity buffer. On this basis, text similar to the following should be incorporated into a policy of the Local Plan: *"**When considering sensitive development, such as residential uses, close to the Sewage Treatment Works, a technical assessment should be undertaken by the developer or by the Council. The technical assessment should be undertaken in consultation with Thames Water. The technical assessment should confirm that either: (a) there is no adverse amenity impact on future occupiers of the proposed development or; (b) the development can be conditioned and mitigated to ensure that any potential for adverse amenity impact is avoided."***

Q12 - Policy EN18: Flooding and Sustainable Drainage

In relation to flood risk, the National Planning Practice Guidance (NPPG) states that a sequential approach should be used by local planning authorities in areas known to be at risk from forms of flooding other than from river and sea, which includes "Flooding from Sewers". We therefore support the reference to sewer flooding.

When reviewing development and flood risk it is important to recognise that water and/or sewerage infrastructure may be required to be developed in flood risk areas. By their very nature water and sewage treatment works are located close or adjacent to rivers (to abstract water for treatment and supply or to discharge treated effluent). It is likely that these existing works will need to be upgraded or extended to provide the increase in treatment capacity required to service new development. Flood risk sustainability objectives should therefore accept that water and sewerage infrastructure development may be necessary in flood risk areas.

Flood risk policies should also make reference to 'sewer flooding' and an acceptance that flooding can occur away from the flood plain as a result of development where off site sewerage infrastructure and capacity is not in place ahead of development.

With regard to surface water drainage it is the responsibility of the developer to make proper provision for drainage to ground, watercourses or surface water sewer in accordance with the

drainage hierarchy. It is important to reduce the quantity of surface water entering the sewerage system in order to maximize the capacity for foul sewage to reduce the risk of sewer flooding.

Limiting the opportunity for surface water entering the foul and combined sewer networks is of critical importance to Thames Water. Thames Water have advocated an approach to SuDS that limits as far as possible the volume of and rate at which surface water enters the public sewer system. By doing this, SuDS have the potential to play an important role in helping to ensure the sewerage network has the capacity to cater for population growth and the effects of climate change.

SuDS not only help to mitigate flooding, they can also help to: improve water quality; provide opportunities for water efficiency; provide enhanced landscape and visual features; support wildlife; and provide amenity and recreational benefits.

With regard to surface water drainage, Thames Water request that the following paragraph should be included in Policy wording or supporting text: "***It is the responsibility of a developer to make proper provision for surface water drainage to ground, water courses or surface water sewer. It must not be allowed to drain to the foul sewer, as this is the major contributor to sewer flooding*.**"

Q24: Are you aware of anything else that should be factored into an update to policy EM1?

For avoidance of doubt Thames Water believes that any review of industrial and warehouse space should include logistics and distribution as required by Paragraph 87 of the NPPF.

Q70: Do you have any comments on the proposed changes to policy SR1 regarding the Island Road area?

In relation to the site currently allocated as SR1c, Island Road A33 Frontage Thames Water continues to support the flexible commercial uses proposed in this allocation. Since the allocation was made over five years ago the need for and importance of storage and distribution has increased. This was reflected in the Council's intention in its recent Call for Sites to review policies SR1 and EM1 responding to the NPPF para 83 (now 87) requiring planning policy to consider the need 'for storage and distribution operations at a variety of scales and in suitably accessible locations'. The SR1c site is able to operate at a viable scale for a storage and distribution operation and is in a highly sustainable and accessible location adjacent to the A33.

The addition of storage and distribution to the allocation is considered to be compatible to the neighbouring uses including the A33 and Sewerage Treatment Works. The site remains deliverable in the Local Plan period with no known deliverability constraints. The extant allocation demonstrates the acceptability of employment uses including industrial and warehousing. Storage and distribution is considered to have similar impacts to general industrial uses so would therefore not require any further assessment. Thames Water otherwise has no comments to make on the proposed changes and supports the continued allocation.

Allocations - Growth Options Comments

The information contained within the new Local Plan will be of significant value to Thames Water as we prepare for the provision of future water supply/wastewater infrastructure.

The attached table provides Thames Water's site specific comments from desktop assessments on water supply, sewerage/waste water network and waste water treatment infrastructure in relation to the proposed sites, but more detailed modelling may be required to refine the requirements. Also, housing numbers weren't supplied on every site so we've commented as much as possible in terms of infiltration, but couldn't provide capacity comments

Early engagement between the developers and Thames Water would be beneficial to understand:

- What drainage requirements are required on and off site
- Clarity on what loading/flow from the development is anticipated
- Water supply requirements on and off site

The time to deliver water/wastewater infrastructure should not be underestimated. It can take 18 months – 3 years for local upgrades and 3 – 5 years plus for more strategic solutions to be delivered. It is therefore vital that the Council and Developers work alongside Thames Water so that we can build up a detailed picture what is being built where, get confidence of when that development is going to start and what the phasing of that development will be.

To support this Thames Water offers a Free pre planning service where developer can engage Thames water to understand what if any upgrades will be needed to serve the development where and when.

Link here > https://www.thameswater.co.uk/developers/larger-scale-developments/planning-your-development/water-and-wastewater-capacity

We recommend developers attach the information we provide to their planning applications so that the Council and the wider public are assured water and waste matters for the development are being addressed.

Where developers do not engage with Thames Water prior to submitting their application, this will more likely lead to the recommendation that a Grampian condition is attached to any planning permission to resolve any infrastructure issues.

We trust the above is satisfactory, but please do not hesitate to contact David Wilson on the above number if you have any queries.

Yours faithfully,

David Wilson
Thames Water Property Town Planner

Appendix B

Thames Water: Reading Local Plan Sites Table

Site ID	Site Name	Net Gain to System (l/day)	Net Foul Water Increase to System (l/s)	Net Property Equivalent Increase - Waste	Net Increase in Demand (l/day)	Net Increase in Peak Demand (l/s)	Net Property Equivalent Increase - Water	Water Response	Waste Response	Additional Comments
64618	Sapphire Plaza, H M Revenue, Watlington Street, Customs, Reading, Berkshire RG1 4TA (Appr. 18/2/20)	273240	3.16	256	140600	4.88	402	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76175	Site Cen1: Aquis House, 49-51 Forbury Road and 33 Blagrave Street	0	0	0	0	0	0	Due to the complexities of water networks the level of information contained in this document does not allow Thames Water to make a detailed assessment of the impact the proposed housing provision will have on the water infrastructure and its cumulative impact. To enable us to provide more specific comments on the site proposals we require details of the Local Authority's aspiration for each site. For example, an indication of the location, type and scale of development together with the anticipated timing of development. Thames Water would welcome the opportunity to meet to discuss the water infrastructure needs relating to the Local Plan.	The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.	
76182	Site Cen10: Part of Reading College, Kings Road	48114	0.56	45	15750	0.55	45	On the information available to date we do not envisage infrastructure concerns regarding water supply network infrastructure in relation to this development/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
49999	Site Cen2: Reading Central Library, Abbey Square	0	0	0	0	0	0	Due to the complexities of water networks the level of information contained in this document does not allow Thames Water to make a detailed assessment of the impact the proposed housing provision will have on the water infrastructure and its cumulative impact. To enable us to provide more specific comments on the site proposals we require details of the Local Authority's aspiration for each site. For example, an indication of the location, type and scale of development together with the anticipated timing of development. Thames Water would welcome the opportunity to meet xxxxx to discuss the water infrastructure needs relating to the Local Plan.	The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.	

50002	Site Cen3: John Lewis Depot, Mill Lane	134640	1.56	126	70000	2.43	200	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76176	Site Cen4: Crowne Plaza Reading, Richfield Avenue	0	0	0	0	0	0		The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.	
75636	Site Cen5: 2 Norman Place	161568	1.87	151	84000	2.92	240	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	The scale of development/s is likely to require upgrades to the wastewater network. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76178	Site Cen6: Reading Bridge House, George Street	269280	3.12	252	140000	4.86	400	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	The scale of development/s is likely to require upgrades to the wastewater network. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.

76180	Site Cen7: Tesco Extra, Napier Road	134640	1.56	126	70000	2.43	200	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	The scale of development/s is likely to require upgrades to the wastewater network. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing and infrastructure phasing plan. The plan should determine the magnitude of spare capacity currently available within the network and what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76181	Site Cen8: Kennet Place, Kings Road	47124	0.55	44	24500	0.85	70	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76188	Site Eas1: Land at 9 Upper Crown Street	30967.2	0.36	29	16100	0.56	46	On the information available to date we do not envisage infrastructure concerns regarding water supply network infrastructure in relation to this development/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.

49950	Site Sou1: Reading Link Retail Park	165000	1.91	154	74600	2.59	213	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76183	Site Sou2: Tunbridge Jones, Cradock Road	64627.2	0.75	60	33600	1.17	96	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
72966	Site Sou3: Former Sales and Marketing Suite, Drake Way	24591.6	0.28	23	0	0	0		On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76184	Site Sou4: Site at Green Park Village, Flagstaff Road	0	0	0	17500	0.61	50	On the information available to date we do not envisage infrastructure concerns regarding water supply network infrastructure in relation to this development/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ		

69788	Site Sou5: 2 Hexham Road	0	0	0	0	0	0	Due to the complexities of water networks the level of information contained in this document does not allow Thames Water to make a detailed assessment of the impact the proposed housing provision will have on the water infrastructure and its cumulative impact. To enable us to provide more specific comments on the site proposals we require details of the Local Authority's aspiration for each site. For example, an indication of the location, type and scale of development together with the anticipated timing of development. Thames Water would welcome the opportunity to meet to discuss the water infrastructure needs relating to the Local Plan.	The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.	
49945	Site Wes1: Land west of Milford Road	47124	0.55	44	24500	0.85	70	The scale of development/s in this catchment is likely to require upgrades of the water supply network infrastructure. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to agree a housing phasing plan. Failure to liaise with Thames Water will increase the risk of planning conditions being sought at the application stage to control the phasing of development in order to ensure that any necessary infrastructure upgrades are delivered ahead of the occupation of development. The housing phasing plan should determine what phasing may be required to ensure development does not outpace delivery of essential network upgrades to accommodate future development/s in this catchment. The developer can request information on network infrastructure by visiting the Thames Water website https://developers.thameswater.co.uk/Developing-a-large-site/Planning-your-development.	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76185	Site Wes2: 72 Berkeley Avenue	23562	0.27	22	12250	0.43	35	On the information available to date we do not envisage infrastructure concerns regarding water supply network infrastructure in relation to this development/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.
76186	Site Wes3: Land at 132-134 Bath Road	29620.8	0.34	28	15400	0.53	44	On the information available to date we do not envisage infrastructure concerns regarding water supply network infrastructure in relation to this development/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	On the information available to date we do not envisage infrastructure concerns regarding wastewater network or wastewater treatment infrastructure capability in relation to this site/s. It is recommended that the Developer and the Local Planning Authority liaise with Thames Water at the earliest opportunity to advise of the developments phasing. Please contact Thames Water Development Planning, either by email Devcon.team@thameswater.co.uk tel: 02035779998 or in writing Thames Water Utilities Ltd, Maple Lodge STW, Denham Way, Rickmansworth, Hertfordshire, WD3 9SQ	These comments are based on foul flows connecting to the public sewer by gravity (not pumped) and no surface water flows being discharged to the public sewer.

76187	Site Wes4: Southcote Library, 234 Southcote Lane	0	0	0	0	0	0	Due to the complexities of water networks the level of information contained in this document does not allow Thames Water to make a detailed assessment of the impact the proposed housing provision will have on the water infrastructure and its cumulative impact. To enable us to provide more specific comments on the site proposals we require details of the Local Authority's aspiration for each site. For example, an indication of the location, type and scale of development together with the anticipated timing of development. Thames Water would welcome the opportunity to meet to discuss the water infrastructure needs relating to the Local Plan.	The level of information contained in this document does not enable Thames Water to make an assessment of the impact the proposed site allocations will have on the waste water network infrastructure and sewage treatment works. To enable us to provide more specific comments we require details of the location, type and scale of development together with the anticipated phasing.	

Appendix C

Environment Agency: Reading Local Plan Partial Update- Reg 18 Consultation

creating a better place

Environment Agency

Reading Borough Council
Planning Manager
Civic Offices Bridge Street
Reading
Reading
RG1 2LU

Our ref: WA/2006/000005/PO-04/PO1-L01
Your ref:

Date: 09 February 2024

Dear Sir/Madam

Reading Local Plan Partial Update- Reg 18 Consultation

Thank you for consulting the Environment Agency to provide comments on the Reading Local Plan Partial Update, preferred options. We are grateful for extending the time for us to provide comments on this draft plan.
We understand that Reading Borough Council is partially updating its local plan due to housing needs and offices, shops and employment uses to meet the population needs and, to meet the national net carbon zero requirements. Therefore, some aspect of the plan is being considered for an update and hence some of the policies would not be updated.
We have reviewed the plan (Local Plan Partial Update Consultation -November 2023 on Scope and Content (reading.gov.uk) and have provided you with the following advice in relation to Policy EN12 and the IDP Draft Infrastructure Delivery Schedule - Table 13.1 on the details regarding Water and wastewater infrastructure and Biodiversity Action Plan and Local Nature reserve Strategies and the Allocated sites in Appendix 2.
We also reviewed the Reading Borough Local_Plan_Adopted_November_2019.pdf (reading.gov.uk) and have provided you with advice about updating policies EN11: Waterspaces, EN16: Pollution And Water Resources, EN18: Flooding And Drainage and H13: Provision For Gypsies And Travellers.

Please refer to our comments below.

1 Policy EN12

1.1 It is stated in the plan that – *'Biodiversity is one of the areas where the context has changed most significantly since the Local Plan was adopted. The Environment Act 2021 introduces new requirements and responsibilities regarding biodiversity, in particular a mandatory 10% biodiversity net gain (BNG) on development sites that comes into force for all but small sites in January 2024 and for small sites in April 2024. Alongside this are other measures, such as the production of Local Nature Recovery Strategies and the introduction of conservation covenants as a way of securing improvements'.* We have analysed the questions and options provided to update Policy EN12 in section 6, of the local plan and have provided you with the following comments below in relation to biodiversity and ecology.

Cont/d..

1.2 *Q17: Do you agree with the proposed level of biodiversity net gain to be sought?*
Following a review of paragraphs 6.22 and 6.23, whilst a commitment to 10% biodiversity net gain is acceptable, as it has been highlighted, there a lot of local authorities and even statutory organisations such as the Environment Agency who are committing to 20% biodiversity net gain. We would therefore encourage the inclusion of a commitment to 20% biodiversity net gain and in that regard the policy could state there will be a commitment to 20% if possible, on each scheme.

1.3 *Q18: Do you agree with the proposed approach to off-site Biodiversity Net Gain provision?*
Q19: Do you have any other comments on how Biodiversity Net Gain is to be addressed?
Following a review of paragraphs 6.24 to 6.26, the policy to deliver off-site biodiversity net gain seems reasonable however on-site biodiversity net gain provision is preferable, both in terms of achieving biodiversity net gain and in terms of developments being directly more biodiverse and therefore we would encourage this.
We welcome the use of Biodiversity Opportunity Areas to help identify areas where there are opportunities for biodiversity improvement. We advise that the Environment Agency and other stakeholders of interest should be involved in helping to make sure that all opportunities are sought, and schemes are designed which will be the most beneficial.

1.4 *Q20: Do you agree with the proposed additions to policy EN12 as a result of the Biodiversity Action Plan?*
Following a revieing of paragraph 6.27, the Environment Agency would like to be consulted on these actions before they are implemented. Wildlife corridors are very important to biodiversity, particularly in urban areas. These could also contribute to the bank of offsite biodiversity net gain areas if possible. These actions could include N10 (as in the Climate Emergency Strategy), as it is important to have a baseline of the likely requirements for habitat compensation and biodiversity net gain and know where the funding for these schemes could possibly come from. If these are going to be used for potential offsite biodiversity net gain, then finding out the baseline of everywhere at the beginning will save time and money compared to doing it on a site-by-site basis.

As highlighted in paragraph 6.28, we support the production of a Biodiversity and Natural Environment SPD and advice that it is included in the policy.

In section 6.29 the First bullet point one state *'Assess planning applications in terms of their impact on soils'*. Soils are very important ecosystems which support all plants and therefore need to be protected but that might mean there is a new resource of soil experts, or new training in place.

The second bullet point state, *'Ensure that, as a minimum, new development does not increase light spillage over rivers'*. This is important for bats and other wildlife which live in the river and its corridor, as the too much light can affect animals' circadian rhythms.

The third bullet point state, *'To ensure that any new landscaping adjacent to watercourses is predominantly native and wildlife friendly'*. We advise that the LPA take out 'predominantly' and replace it with 'all' to make the wording stronger because native species are very important to promote ecosystem recovery.

The fourth bullet point state, *'To require the re-naturalisation of the river bank when new development is adjacent to it'*. This is very important and should be encouraged wherever this is a possibility. The LPA should engage/liaise with Environment Agency for advice on this.

It would be important to include all the elements listed in paragraph 6.29 in the policy.

2. IDP Draft Infrastructure Delivery Schedule

2.1 Schedule - Biodiversity Action Plan and Local Nature reserve Strategies

We have reviewed Table 13.1- IDP Schedule, and note the details provided regarding infrastructure relating to the Biodiversity Action Plan and Local Nature reserve Strategies. We advise that the LPA includes details about the eradication of invasive species as part of scheme requirements, as they can be a serious barrier to nature recovery. In addition, information should be included which ensures the promotion of the use of native species to increase diversity.

2.2 IDP Schedule - Water and wastewater infrastructure

We have reviewed Table 13.1- IDP Schedule, and note the details provided regarding infrastructure relating to Water and wastewater infrastructure. At the moment it is assumed that the wastewater flows from the additional proposed development will flow to Reading Sewage Treatment Works (STW) and so we have provided comments below for your awareness of the situation at the Reading STW and the need to consider (which will include engagement with Thames Water) the below and how it affects development on the allocated sites in this partial update of the local plan.

- Reading STW has a maximum permitted flow of 177,725 m3/d. In 2022 the maximum flow was 105,282m3/d and the average 63,752 m3/d. In 2021 (which was a wetter year) the maximum and average recorded flows were 128,663m3/d and 69,339 m3/d respectively. This suggests there is some capacity within the existing discharge permit for new development.
- The Environment Agency would like to convert the maximum flow value of the permit to a Dry Weather Flow (DWF). This is the standard and preferred method for Environmental Permits and helps us more accurately measure compliance. It is important that Thames Water engage with the Environment Agency as soon as possible to make this permit alteration.
- The storm overflow setting (sometimes known as the Flow to Full Treatment (FFT)) at Reading is 1572 l/s. This is likely below the 3PG+iMax+3E (or 3xpDWF) advised minimum standard for overflows for the population served. This means that additional development could increase the risk of storm overflows either in wet or dry conditions. Over the past 3 years Reading STW has been a relatively low spilling site, but we would want assurances from Thames Water that additional development will not cause this site to become a frequent spiller.
- The permitted storm tank capacity at Reading is 11,333m3, however a recent compliance assessment report identified the available storm tank on site to be 13,098 m3. Environment Agency guidance states that STW should have storm tank capacity of 68 litres per head of population served. The Population

Equivalent at Reading STW for the 2022 compliance year (2023 data not available at time of writing) was 210,585. Therefore, the storm tank capacity available should be around 14,300 m3. This is not significantly more than the available storage on site, however, if the storm tank size is not increased to keep pace with growth within the catchment, the risk of storm discharges that have not benefited from storm tank settlement will increase, which will potentially further deteriorate the receiving waterbody.

- The Environment Agency visited Reading STW in June 2023, and the visit resulted in Thames Water being issued a Compliance Assessment Report (CAR) form in which several permit breaches were recorded. Most notably is that Reading STW seems unable to handle incoming flows during wet weather and engages in a practice called 'flow clipping' to ensure compliance with regulatory sampling. This is considered a serious breach of an Environment Permit as it sends incoming flows to the storm tank before the permitted FFT has been reached in order to ease the pressure on the STW process. Until these issues are resolved, any additional flows arriving from new development will increase pressure on Reading STW's process and risk flows being discharged to the storm tanks and/or the environment in breach of the permit. This poses a significant environment risk. The CAR form (which is in the public register) identifies actions for Thames Water to take to come back into compliance at Reading STW. As a minimum the Environment Agency would expect these to be completed before any new developments are connected to the sewerage network.
- Other breaches were identified in the CAR form and need to be resolved.
- In the documents provided there are comments from Thames Water highlighting capacity issues, particularly in South and West Reading. My assumption is that these capacity issues are with the sewerage network and/or any network pumping stations. Any additional flows into an under-capacity network can lead situations such as rising main or pumping station failures, which can cause significant environmental damage. Improvements must be made to the network to ensure these events occur before new developments come online.

3 Allocated sites in Appendix 2

3.1 Appendix 2 shows sites nominated for development in this partial local plan update. Paragraph A2.1 states; *'Please note that we are consulting on all sites put forward to ensure that a decision on inclusion or exclusion takes account of your views, and that inclusion in this appendix does not mean that a site will necessarily be allocated.'* Section 1.7 also states; *'An initial description of issues and constraints is included with each site, but often further evidence will be necessary before there can be a final conclusion'.* We have therefore reviewed the sites but have been unable to provide you with comments regarding whether any of the 20 sites should be included or excluded from the local plan. One reason is for example, we have not seen an updated Strategic Flood Risk Assessment (SFRA) or evidence of the Sequential test used to justify the selected sites and hence are unable to advice on the deliverability of sites until this evidence base is provided.

However, following our assessments of the sites against site constraints (flood risk, biodiversity and ecology groundwater protection, and wastewater) we have provided advice on what may be required to help develop the sites and opportunities that may exists to improve the sites. We are happy to continue to work with you to further assess the sites about its deliverability.

Please refer to our comments in the attached spreadsheet – 'Environment Agency comments on the Allocated sites' and a summary of our comments concerning some environmental matters below.

3.2 Flood risk

The sequential test is only referenced for one allocated site but all sites in Flood Zones 2 or 3 should pass the sequential test so further detail is required including justification relating to why the allocate sites are appropriate for development. Similarly, the document should discuss the exception test for each of the sites where relevant as directed in national policy.

Please note that according to NPPF 2023, paragraphs 170 and 171;
*170 The application of the **exception test** should be informed by a **strategic** or **site specific flood risk assessment**, depending on whether it is being applied during plan production or at the application stage. **To pass the exception test** it should be demonstrated that: a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and b) **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 overal**l. 171. Both elements of the exception test should be satisfied for development to be allocated or permitted.*

Some of the allocated sites are located in higher risk flood zones and we find there is no reference in the plan about updating the Strategic Flood Risk Assessment (SFRA) to reflect the evidence supporting the allocated sites and how 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.

An update to the SFRA is required and must reflect update to climate change allowances and national policy and guidance - Flood risk and coastal change section of the PPG. We recommend the latest climate change allowances are used to consider if developments will be safe for their lifetime. The Environment Agency latest modelling (Kennet - Tyle Mill to Thames Confluence 2018 and Thames - Pangbourne to Sonning 2019) does not have the exact climate change allowances modelled so our assessment of the impact of climate change is slightly conservative.

We recommend reviewing the Flood Risk Management Plan and River Basin Management Plan measures for Reading because the plans set out the current state of the water environment, setting objectives that are crucial for sustainable growth and effective regulation.

3.3 Ground water and contaminated land

Please note that we have identified that many of these proposed sites have had site investigations done in the past. In these cases, we stated, '*This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines - Land contamination risk management (LCRM) - GOV.UK (www.gov.uk).'*

For those sites where we do not hold records of site investigations, desk studies would be expected as a minimum requirement which we would endorse when we

are consulted at the planning application stage. Further investigations and remediation may also be required. We note that for some sites in Appendix 2, this aspect has been briefly noted. For example, for site 8 Kennet Place, Kings Road: *Issues and constraints: Site subject to potential contamination.* At this site for example, we do hold a record of prior site investigation therefore we support this inclusion.

3.4 Waste water drainage

We have been unable to provide detailed comments for you on the allocated sites about wastewater drainage because there are water drainage concerns that must be addressed before further sites are considered and allocated for development in Reading. Please refer to the evidence as provided in section 2.2.

In this section we have provided you with comments on the Adopted Local Plan. We have reviewed the Reading Borough Local_Plan_Adopted_November_2019.pdf (reading.gov.uk) and advise that the following policies are updated.

4 EN11: Waterspaces in the Local Plan Adopted November_2019

4.1 The policy in the adopted local plan says: *'Be set at least ten metres back from the watercourse wherever practicable and appropriate to protect its biodiversity significance'*. We recommend a stronger wording and suggest; *'where practicable' is deleted and replaced with 'must' or 'should'. The policy can then highlight that where a/the site is constrained there can be exceptions however it is important to emphasise that the requirement is for a 10-metre buffer in the first instance.*

4.2 Section 4.2.50 states '*Additionally, where a watercourse runs through a proposed development, a buffer shall be provided on both banks. There should be a long-term landscape and ecological management plan for this buffer'*. We recommend the replacement of *'a buffer'* to *'an ecological buffer'* to ensure the buffer zones are ecologically enhancing and increases biodiversity and protects species and that is it managed appropriately to maintain these ecological features.

4.3 Section 4.2.51 states *'Where barriers to fish are present in a watercourse adjacent to development proposals, the design should include measures to allow for the natural movement of fish within the watercourse'*. This could include a hierarchy of options. For example, removing the barrier is what we recommend however where this is not possible, a naturalised bypass channel should be proposed over a technical pass, or similar which should be last option.

4.4 It would be useful to include a paragraph about biodiversity net gain in this policy as well. The paragraph could highlight that if there is a watercourse or a river and a riparian zone within the site boundary, then the watercourse part of the statutory biodiversity net gain metric 4.0 must be completed and an increase of at least 10% biodiversity net gain must be provided. It must also be accompanied with appropriate literature to show how the enhancement will be achieved and how it will be secured for 30 years.

5 Policy EN16 (Pollution & Water Resources)

5.1 In terms of contaminated land we suggest that the policy is amended to include the highlighted text to strengthen the policy.

'Development will only be permitted where it would not be damaging to the environment and sensitive receptors through land, noise or light pollution; where it would result in no deterioration in, or ideally enhance, land quality, groundwater and surface water quality; and where adequate water resources, sewerage and wastewater treatment infrastructure will be in place to support the proposed development prior to occupation.
Proposals for development that are sensitive to the effects of noise or light pollution will only be permitted in areas where they will not be subject to high levels of such pollution, unless adequate mitigation measures are provided to minimise the impact of such pollution.
Development will only be permitted on land affected by contamination where it is demonstrated that the contamination (of land and/or controlled waters) and land gas can be satisfactorily managed or remediated so that it is suitable for the proposed end use and will not impact on the groundwater environment, human health, buildings and the wider environment, during demolition and construction phases as well as during the future use of the site.'

5.2 In terms of highlighting the commitment to protecting the water environment from development, the Policy states that *'development will only be permitted where it would not lead to a deterioration in surface water quality, and where adequate sewage and wastewater treatment infrastructure will be in place to support the new development'.*
This is currently not the case with Reading Sewage Treatment Works (STW). Our main concern is with the performance and compliance of Reading STW. Actions have been identified to resolve those issues, and we expect those to be in place before the STW is put under more pressure from additional development. Similarly, any sewerage networks improvements that have been identified need to be completed as soon as practicable.
It is assumed that the wastewater flows from the additional proposed development will flow to Reading STW. If any development on the allocated site is to be served by a STW other than Reading STW, please inform the Environment Agency as soon as possible so we can assess the impacts. We have provided comments regarding the Reading STW in section 2.2 of our comments.

6. Policy EN18 Flooding and Drainage

6.1 Since the local plan was adopted there have been changes in the national planning policy (especially the flood risk section of the Planning Practice Guidance 2022) that should be reflected in the Plan. In 2022 the climate change allowances were revised giving a range of allowances to be used based on flood zone and vulnerability, so we recommend this section of the policy to be updated.

6.2 Similarly, the definition of Flood Zone 3b (the functional floodplain) has been updated so it is now considered as land having a 3.3% or greater annual probability of flooding. This extent is included in our latest modelling for the area. These changes will need to be updated in the SFRA.

6.3 It is noted that in the adopted local plan the text box for the policy has limited information with additional detail in the supporting text such as the requirements for when an FRA will be needed. We recommend the supporting text is added to the EN18 policy text box to make the policy clearer and further detail is added discussing what development is and is not appropriate in the functional floodplain and safeguarding areas of floodplain storage. We are happy to work with you on what the wording of the policy.

6.4 We refer you to the following guidance documents for further information on Climate change allowances: Flood risk assessments: climate change allowances - GOV.UK (www.gov.uk) and Flood Risk Management Plans for Reading: Reading (Town) – Flood Plan Explorer (data.gov.uk)

7 Policy H13 Provision for Gypsies and Travellers

7.1 The policy in the adopted local plan states in bullet point i)
'Have safe and convenient access onto the highway network'.
We recommend this is amended to read;
'*Have safe and convenient access onto the highway network and to an area of safe refuge in the event of a flood.'*

Final Comments
We trust the above comments are useful.

We would like to highlight that our aim is to assist you in preparing and implementing a sound, robust and effective plan that is reflective of national policy so that it may deliver sustainable development in Reading.

We look forward to working with you on producing a plan which is sound and fit for purpose therefore if you have any questions, please do not hesitate to contact me.

Yours faithfully

Miss Judith Montford
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Appendix D

Environment Agency: Comments on the 20 allocated sites

Environment Agency comments on the allocated sites

Site name	Sise (ha) and Current Use	Development suggested by nominator	Alternative development options	Site Constraints: Flood Risk, Water Environment, Biodiversity and Ecology, Groundwater and contaminated land	Chosen option and Requirements	Opportunities
Aquis House, 49-51 Forbury Road and 33 Blagrave Street	0.42 ha. Offices and car parking	Redevelopment of offices for mixed residential and office development of 10-15 storeys	1. Do not allocate 2. Redevelopment for mixed use residential and office at below tall building threshold level (12 storeys) 3. Redevelopment or change of use of 33 Blagrave Street only 4. Redevelopment or change of use of Aquis House only	FZ 1. Holy Brook approx 325m south of site. Superficial Secondary A aquifer.	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk)	
Reading Central Library, Abbey Square	0.1 ha. Library	Proposal to move the Central Library to Bridge Street, which frees up the library site. Proposal would be for a residential-led development	1. Do not allocate. 2. Commercial development including office and ground floor retail and related uses.	FZ 1. Holy Brook on site (runs under library). Atlantic Salmon and European Eel migratory route. Bredrock Principal aquifer, Superficial Secondary A aquifer. Former warehouse on site - potential contamination.	The Plan refers to this site as being in Flood Zone 3 and our modelling shows the site to be on the boundary of Flood Zone 3b. The proposed development is therefore not compatible with this flood zone. The culverted main river (Holy Brook) runs beneath the site. The culvert poses an issue as building over or extending a culvert is not usually supported by the Environment Agency. Due to the proximity to the main river development on this site would likely be flagged as needing a Flood Risk Activity Permit.	As the Holy Brook runs under the site, there needs to be the opportunity to de-culvert it in the future. This is in line with current policy EN11, specifically paragraph 4.2.48 which talks about de culverting the Holy Brook for ecological and flood risk benefits

John Lewis Depot, Mill Lane	0.37 ha. Warehouse	Redevelopment of warehouse for around 200 build to rent dwellings	1. Do not allocate 2. Retain as part of existing allocation CR14g, 3. Residential development at more general town centre or edge of centre densities (75-125 dwellings)	FZ 1. River Kennet approx. 90m west of site. Bedrock Principal Aquifer.	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk)	Any option (perhaps in this case option 2 on the alternative development options) which encourages more space on site for biodiversity benefits should be encouraged due to the urbanised nature of the area the site is located

Crowne Plaza Reading, Richfield Avenue	1.29 ha. Hotel and car park	Mix of uses through the full or partial redevelopment for hotel (Class C1) with ancillary food and beverage offering (Class E), major residential (Class C3), care home (Class C2) and/or electric vehicle charging station/garage (Sui Generis).	1. Do not allocate 2. Hotel redevelopment only (whole site) 3. Hotel redevelopment only (car park) 4. Residential development and/or residential care only (whole site, estimated 5. Residential development and/or residential care only (car park, estimated at 40-60 dwellings	FZ 2 and 3. River Thames adjacent. Atlantic Salmon and European Eel migratory route. Historic landfill site (Richfield Avenue) and Bedrock Principal Aquifer and Presence of investigated site	The site is within Flood Zone 3a, and the red line boundary is on the edge of the 5% AEP and 3.3% AEP extents (Flood Zone 3b) so the proposed developments could be considered incompatible with the flood zone. Most of the site is within the 1% AEP plus climate change extent so there could be an increase in risk elsewhere because level for level floodplain compensation may not be achievable. The document refers to the sequential test and the exception test but no parameters of what would be considered suitable development have been provided. The site borders Environment Agency owned land so this should be considered depending on the location of works within the red line boundary. This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines - Land contamination risk management (LCRM) - GOV.UK (www.gov.uk).	The site is next to the Thames and the red line boundary goes up to the river bank, therefore there could be a lot of opportunity for re naturalisation of the river bank.

Norman Place	0.55 ha. Offices	Residential development of up to 240 homes	1. Do not allocate 2. Residential development at more general town centre or edge of centre densities (110-185 dwellings) 3. Conversion to residential, estimated 70-80 dwellings	FZ 2 and 3 within/around boundary of site. River Thames adjacent. Atlantic Salmon and European Eel migratory route. Bedrock Principal Aquifer and presence of investigated site adjacent.	The site is in Flood Zone 3. The majority of site is outside the 1% AEP plus climate change extent, but the main access road is within the climate change extent so access and egress should be considered for the lifetime of any development. The red line boundary is on the edge of the 5% AEP and 3.3% AEP extents so development could be considered incompatible with the flood zone. This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	The site is next to the Thames, so there is a good opportunity for river restoration and re-naturalisation and we would like to be consulted. More space should be created on the site for biodiversity enhancements.
Reading Bridge House, George Street	0.4 ha. Offices	Residential development of 300-400 dwellings	1. Do not allocate, expected continuation in office use 2. Conversion of existing building to residential, estimated at around 200 dwellings 3. Residential development at general town centre densities, estimated at around 80-135 dwellings	FZ 2, small portion of FZ 3 in north of site. River Thames adjacent. Atlantic Salmon and European Eel migratory route. Bedrock Principal Aquifer identified there could be potential contamination.	The red line boundary is on the edge of the 5% AEP and 3.3% AEP extents so development could be considered incompatible with the flood zone. The site is within the 1% AEP plus climate change extent so there could be an increase in risk elsewhere because level for level floodplain compensation may not be achievable	The site is next to the Thames, so there is a good opportunity for river restoration and re-naturalisation and we would like to be consulted. More space should be created on the site for biodiversity enhancements.

Tesco Extra, Napier Road	0.88 ha. Part of superstore car park	Residential development of 150-200 dwellings.	1. Do not allocate 2. Additional retail development, 3. Residential development at more typical urban densities, approximately 100 dwellings	FZ 2. River Thames approx. 45m north of site. Deciduous woodland. Historic Landfil (Napier Road), Bedrock Principal Aquifer and Superficail Secondary A aquifer and Presence of investigated site.	The site is in Flood Zone 2. Most of the site is within the 1% AEP plus climate change extent so there could be an increase in risk elsewhere because level for level floodplain compensation may not be achievable. It should be noted that Napier Road floods and that is the only vehicle access route. The Thames Path to the north and underpass under the railway also floods so all pedestrian routes will also be impacted in a flood. This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	The site is near to the river, so there are good opportunities for river restoration. This will enhance the towpath between the site and the riverbank and it is very well used in that area. There is also a wooded area between the site and the river, which could be ecologically enhanced and aesthetically pleasing.
Kennet Place, Kings Road	0.29 ha. Offices	Conversion to approx. 70 apartments	1. Do not allocate 2. Redevelopment for residential at typical town centre densities, approximately 60-100 dwellings.	FZ 1, River Kennet approx 6m north of the site. Atlantic Salmon and European Eel migratory route. Superficial Secondary A aquifer and Bedrock Principal aquifer and Presence of investigated site.	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk) It is in Flood Zone 1 and close to the main river so development on this site may need a Flood Risk Activity Permit.	This is on the banks of the River Kennet and near to the Kennet and Avon canal too, hence there could be opportunities for river restoration on the river bank. It is currently hard bank in the site area and this would benefit from being a more natural bank, or even some vegetation like floating rafts.

					This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	
Sapphire Plaza, Watlington Street and Royal Court, Kings Road	0.4 ha. Office and residential	Residential development of 250-400 dwellings (215-365 net gain) and around 3,000 sq m of commercial space	1. Do not allocate 2. Residential development at general town centre densities of 80-135 dwellings (45-100 net gain) 3.Redevelopment of Sapphire Plaza for residential (approximately 50-85 dwellings) together with refurbishment of Royal Court 4. Conversion of Sapphire Plaza to residential (approximately 70 dwellings) together with refurbishment of Royal Court	Small portion of FZ 2 and 3 along north boundary of site. Kennett and Avon Canal approx 5m north of site. Atlantic Salmon and European Eel migratory route. Superficial Secondary A aquifer and Bedrock Principal aquifer.	The red line boundary is on the edge of the 5% AEP and 3.3% AEP extents so development could be considered incompatible with the flood zone. The site is close to the main river so development on this site would likely be flagged as needing a Flood Risk Activity Permit.	On the banks of the Kennet and Avon canal, and currently hard bank, so there could be opportunities for river restoration on the river bank. It is currently hard bank in the site area and this would benefit from being a more natural bank, or even some vegetation like floating rafts

Part of Reading College, Kings Road	0.51 ha. Part of college, theatre, car park	Mixed use or residential development with around 45 dwellings.	1. Do not allocate 2. Residential development of site excluding the part occupied by the theatre to ensure that this important use is not lost. This would result in a small reduction of the site to 0.44 ha 3. continued educational use	FZ 1. Kennett and Avon Canal approx 210m north of site. Superficial Secondary A aquifer and Bedrock Principal aquifer.	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk)	
Reading Link Retail Park	2.03 ha. Retail park	Residential and retail development for 200 homes and 2300sqm retail use	1. Do not allocate. 2. Residential development only with focus on family housing (est 100 - 150 dwellings)	Narrow band of FZ2 on west of site. Holy Brook 9m from site, along northern boundary. Coastal and floodplain grazing marsh adjacent to site. Principal bedrock aquifer, secondary superficial aquifer A and Presence of investigated site approx 17m from site	The red line boundary is on the edge of the 5% AEP and 3.3% AEP extents so development could be considered incompatible with the flood zone. The site is just within the 1% AEP plus climate change extent so there could be an increase in risk elsewhere. The site is close to the main river so development on this site would likely be flagged as needing a Flood Risk Activity Permit. This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	There is an opportunity to restore the bank of the Holy Brook at this site.

Tunbridge Jones, Cradock Road	0.69 ha. Industrial	Residential development of 72 - 96 dwellings	1. Do not allocate. 2. Development for employment uses	FZ1. Secondary bedrock aquifer A. Historic landfill on site and Presence of investigated site	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk) This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	
Former Sales and Marketing Suite, Drake Way	0.25 ha. Vacant former marketing building	Residential development of 23 dwellings	1. Do not allocate. 2. Residential development of 14 dwellings in line with expired permission	FZ2. Main river Foudry Brook 5m to west of site. European Eel migratory route. site boundary includes southern end of large pond. Secondary bedrock aquifer A. historic landfill 11m from site. Potential contamination from previous sewage works use and Presence of investigated site.	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk) It is in Flood Zone 1 and close to the main river so development on this site may need a Flood Risk Activity Permit. This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that	This area has a pretty natural bank and is a frequently used path, next to the Foundry Brook and there could be opportunities for enhancement. There is also an offline pond in that area, which could provide opportunities for enhancements and possibly linking to the river as a backwater.

					sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	
Site at Green Park Village, Flagstaff Road	0.24 ha Temporary construction compound	Residential development of 50 dwellings including affordable housing	1. Do not allocate. 2. Development for office and commercial use	FZ2. Secondary superficial aquifer A, secondary bedrock aquifer A, railway 45m from site. Boundary includes historic landfill and Presence of investigated sites.	It is in Flood Zone 1 and outside the 1% AEP plus climate change extent. We understand this area is currently being used a temporary compound area and with the previous changes of use it is possible ground levels will have changed. This would need to be assessed with the potential for updated modelling needed to consider recent ground levels changes/different flow routes. Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk) This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings,	There is a pond near the site and some ordinary watercourses a bit further away. There could be opportunities to enhance the pond area

					further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	
2 Hexham Road	0.46ha. Cleared site (NB Easimap shows buildings here)	Residential development	1. Do not allocate. 2. Development for community uses.	FZ1. Unproductive bedrock aquifer.	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk)	

Land west of Milford Road	0.86 ha. Industrial uses, former car park	Residential development of around 70 dwellings	1. Do not allocate. 2. Residential development of only vacant land, approx 10 - 15 dwellings. 3. Redevelopment for employment uses	FZ2 55m to railway lines. Principal bedrock aquifer and Presence of investigated sites to west of site.	The site is in Flood Zone 2. The site is within the 1% AEP plus climate change extent so there could be an increase in risk elsewhere because level for level floodplain compensation may not be achievable. This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	
72 Berkeley Avenue	0.33 ha. Nursery	Residential use	1. Do not allocate. 2. Residential conversion only (est 10 -12 dwellings). 3. Residential development (est 25 - 35 dwellings). 4. Conversion plus additional development (est 20 - 30 dwellings)	FZ1. Secondary superficial aquifer A, secondary bedrock aquifer A	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk)	

Land at 132-134 Bath Road	0.51 ha. Industrial, car dealership and workshops	1. Residential development only (est 44 dwellings) 2. Mixed use commercial and residential	1. Do not allocate. 2. Residential development at typical suburban densities (approx 20 -25 dwellings). 3. Redevelopment for employment uses	FZ1 Ordinary water course (drain) along north of site. Much of site subject to potential contamination. Secondary bedrock aquifer A and Presence of investigated adjacent to East of site.	It is in Flood Zone 1 and outside the 1% AEP plus climate change extent. The site is next to an ordinary watercourse so permission may be required from the Lead Local Flood Authority. There is a very small ditch/drain on the site, which may be culverted. If it is, there needs to be the opportunity to de culvert it in the future provided. Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk) This site has been the subject of prior site investigations. An updated desk study and site investigation may be warranted. Subject to the findings, further remediation or soils or controlled waters, may be required to bring this site into use. We would endorse that sites are fully investigated following LCRM guidelines. Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)	
Southcote Library, 234 Southcote Lane	0.17 ha. Former library and community hall	Residential development	1. Do not allocate. 2. Development fo community uses	FZ1. Secondary bedrock aquifer A	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk)	

Land at 9 Upper Crown Street	0.35ha. Car Park	Residential development of around 46 dwellings	1. Do not allocate. 2. Residential development at typical urban densities of approx 25-40 dwellings	FZ1. Secondary superficial aquifer A, secondary bedrock aquifer A	Flood Risk Assessments may be required for some of these developments. The following guidance should be adhered to: Flood risk assessment in flood zone 1 and critical drainage areas - GOV.UK (www.gov.uk)	