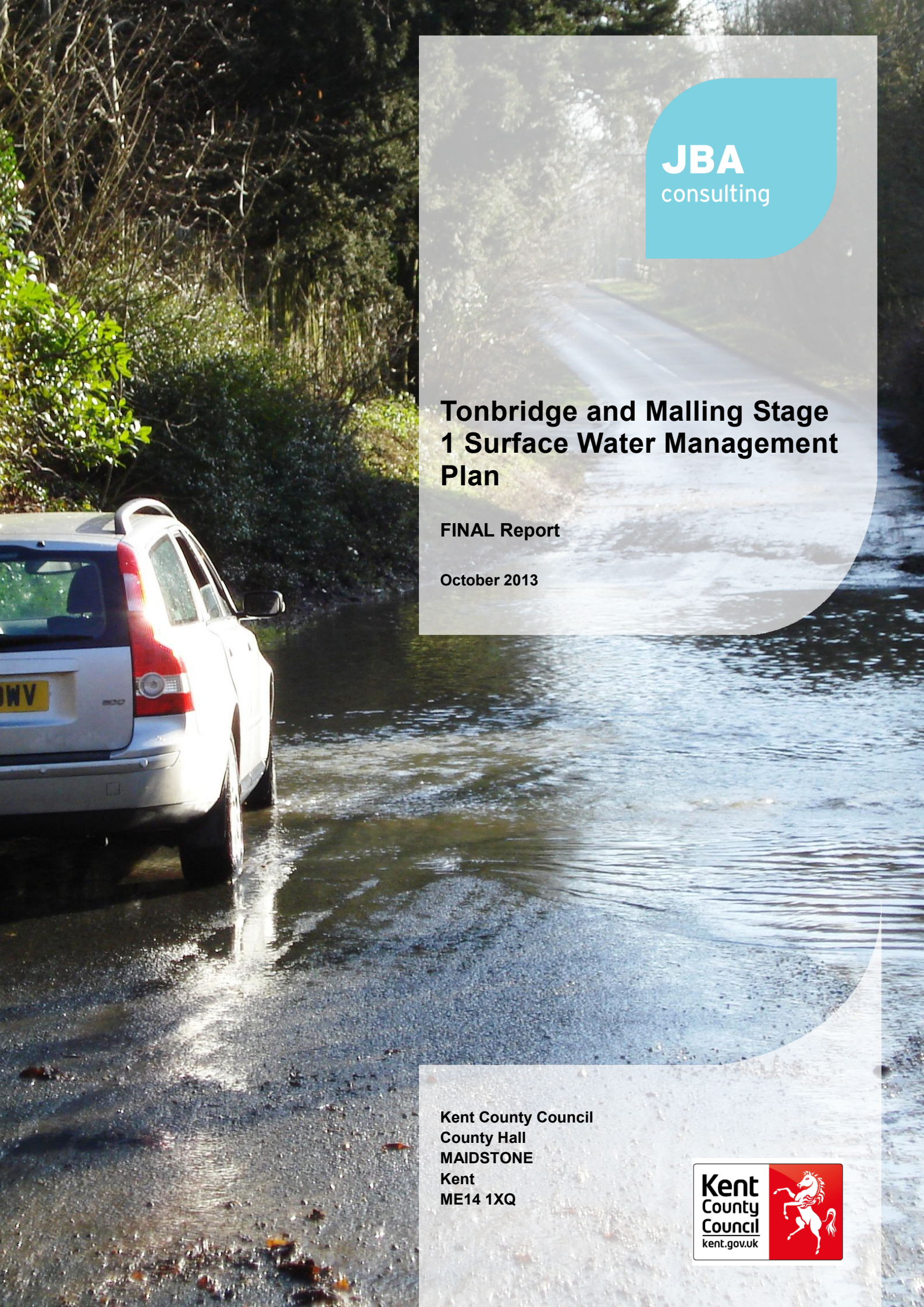

Tonbridge and Malling Stage 1 Surface Water Management Plan

FINAL Report

October 2013

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Revision History

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Draft Report, v1 / July 2013		**Max Tant (Kent County Council)**
Final Report v1/ October 2013		**Max Tant (Kent County Council)**

Contract

This report describes work commissioned by Kent County Council; under commission reference LL050 Kent County Councils' representative for the contract was Max Tant of Kent County Council. Margaret Moran and Rachel Huitson Little of JBA Consulting carried out this work.

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Purpose

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We would like to acknowledge and thank Tonbridge and Malling Borough Council, Upper Medway IDB, Southern Water, Environment Agency and Kent County Council for all their assistance during this project. Cover photo provided by the Tonbridge and Malling Borough Council.

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Abbreviations and Glossary of Terms

Term	Definition
CFMP	Catchment Flood Management Plan- A high-level planning strategy through which the Environment Agency works with their key decision makers within a river catchment to identify and agree policies to secure the long-term sustainable management of flood risk.
CIRIA	Construction Industry Research and Information Association
DA	Drainage Area
DEM	Digital Elevation Model
Drainage Area	Are defined for the purposes of this study using FMfSW (1 in 200 year (deep)), historic flooding records and policy areas as defined by Kent County Council
DTM	Digital Terrain Model
EA	Environment Agency
EU	European Union
Flood defence	Infrastructure used to protect an area against floods as floodwalls and embankments; they are designed to a specific standard of protection (design standard).
Flood Risk Area	An area determined as having a significant risk of flooding in accordance with guidance published by Defra and WAG (Welsh Assembly Government).
Flood Risk Regulations	Transposition of the EU Floods Directive into UK law. The EU Floods Directive is a piece of European Community (EC) legislation to specifically address flood risk by prescribing a common framework for its measurement and management.
Floods and Water Management Act	Part of the UK Government's response to Sir Michael Pitt's Report on the Summer 2007 floods, the aim of which is to clarify the legislative framework for managing surface water flood risk in England.
Fluvial Flooding	Flooding resulting from water levels exceeding the bank level of a main river
FMfSW	Flood Map for Surface Water
IDB	Internal Drainage Board
JBA	Jeremy Benn Associates
KCC	Kent County Council
LLFA	Lead Local Flood Authority - Local Authority responsible for taking the lead on local flood risk management
Main River	A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers
NPPF	National Planning Policy Framework
NRD	National Receptor Dataset – a collection of risk receptors produced by the Environment Agency
Ordinary Watercourse	All watercourses that are not designated Main River. Local Authorities or, where they exist, IDBs have similar permissive powers as the Environment Agency in relation to flood defence work. However, the riparian owner has the responsibility of maintenance.
Pathway	The mechanism or method flood waters are directed to a location/ receptor.
PFRA	Preliminary Flood Risk Assessment
Receptor	The area at risk from receiving flood water
RFCC	Regional Flood & Coastal Committees
Risk	In flood risk management, risk is defined as a product of the probability or likelihood of a flood occurring, and the consequence of the flood.
RMA	Risk Management Authorities
SAB	SuDS Approving Body - responsible for approving, adopting and maintaining drainage plans and SuDS schemes that meet the National Standards for sustainable drainage.
Sewer flooding	Flooding caused by a blockage or overflowing in a sewer or urban drainage system.
SFRA	Strategic Flood Risk Assessment
SHLAA	Strategic Housing Land Availability Assessment - The Strategic Housing Land Availability Assessment (SHLAA) is a technical piece of evidence to support the Core Strategy and Sites & Policies Development Plan Documents (DPDs). Its purpose is to demonstrate that there is a supply of housing land in the District which is suitable and deliverable.
Source	Source of flooding i.e. heavy rainfall
Stakeholder	A person or organisation affected by the problem or solution, or interested in the problem or solution. They can be individuals or organisations, includes the public

Term	Definition
	and communities.
SuDS	Sustainable Drainage Systems - Methods of management practices and control structures that are designed to drain surface water in a more sustainable manner than some conventional techniques
Surface water flooding	Flooding as a result of surface water runoff as a result of high intensity rainfall when water is ponding or flowing over the ground surface before it enters the underground drainage network or watercourse, or cannot enter it because the network is full to capacity, thus causing what is known as pluvial flooding.
SW	Southern Water
SWMP	Surface Water Management Plan - The SWMP plan should outline the preferred surface water management strategy and identify the actions, timescales and responsibilities of each partner. It is the principal output from the SWMP study.
TMBC	Tonbridge and Malling Borough Council
UMIDB	Upper Medway Internal Drainage Board

1 Introduction

1.1 What is a Surface Water Management Plan

A Surface Water Management Plan (SWMP) is a study to understand the flood risks that arise from local flooding, which is defined by the Flood and Water Management Act 2010 as flooding from surface runoff, groundwater, and ordinary watercourses.

SWMPs are led by the Lead Local Flood Authority (Kent County Council) in partnership with other flood risk management authorities. In relation to the Stage 1 SWMP, risk management authorities include Kent County Council, Local Authority, Environment Agency, Internal Drainage Boards (IDBs), Southern Water, Thames Water and other relevant authorities. The purpose of a SWMP is to identify what the local flood risk issues are, the effect they have and what options there may be to manage them. These options are presented in an Action Plan which lists the partners who are responsible for taking the options forward. Although the SWMP provides a full flood history for the study area which may include coastal and fluvial flood sources, the action plan only proposes measures to manage local flooding. The Action Plan is agreed by partners and reviewed periodically.

This SWMP is being undertaken by Kent County Council (KCC) to investigate the local flood risks in Tonbridge and Malling as part of their remit for strategic oversight of local flood risk management in Kent, conferred on them by the Flood and Water Management Act 2010. Tonbridge and Malling has been identified as an area potentially at risk of local flooding in the Preliminary Flood Risk Assessment[1], which KCC undertook in 2011 for the whole county of Kent. This SWMP will determine whether there are any local flood risks and what further work may be needed. To find out more about KCC's role and other SWMPs they are undertaking please visits their website:

www.kent.gov.uk/flooding

1.2 Summary of aims and objectives

The main aims and objectives of the Tonbridge and Malling Stage 1 SWMP are detailed below:

1. The establishment of a local partnership;
2. The collation of a comprehensive flood history for all relevant local flood risk sources;
3. The identification, collation and mapping of all available flood data and its availability for future use including an assessment of the reliability of the data;
4. The identification, where possible from the available data, of flood prone areas;
5. The identification of areas where existing data may be missing or unreliable, as a consequence of inappropriate local assumptions, additional local features or any other reason, and options to improve our understanding;
6. The identification of areas where the risks are from a combination of sources;
7. Identification of any proposed or allocated development sites and any impacts they may have on local flood risks (where sites are made available)*;
8. The preparation of source pathway receptor models for all the risks and sources that are identified;
9. The identification of any easy win opportunities that are apparent without further work, which may include planning policies or simple flood defence measures; and
    a. What needs to be achieved to reduce flood risk, including next steps
    b. The owner of the actions,
    c. The timeframe for undertaking them; and
    d. Indicative costs.

* Note that sites have not been specifically identified for Tonbridge and Malling as part of this Stage 1 SWMP. However, specific planning policies have been highlighted within the Generic

[1] Kent County Council (2011) Preliminary Flood Risk Assessment

Action Plan. One of the objectives of this Stage 1 SWMP is to provide an aid to planners to identify vulnerable development sites.

1.3 Study area

The SWMP study area includes Tonbridge and Malling borough with the exception of Maidstone and Malling which was covered within a separate SWMP[2]. Figure 1.1 describes the extent of the study area.

Location	Tonbridge and Malling Borough
Catchment Flood Management Plan (CFMP)	North Kent Rivers and River Medway
Local Authority	Tonbridge and Malling Borough Council

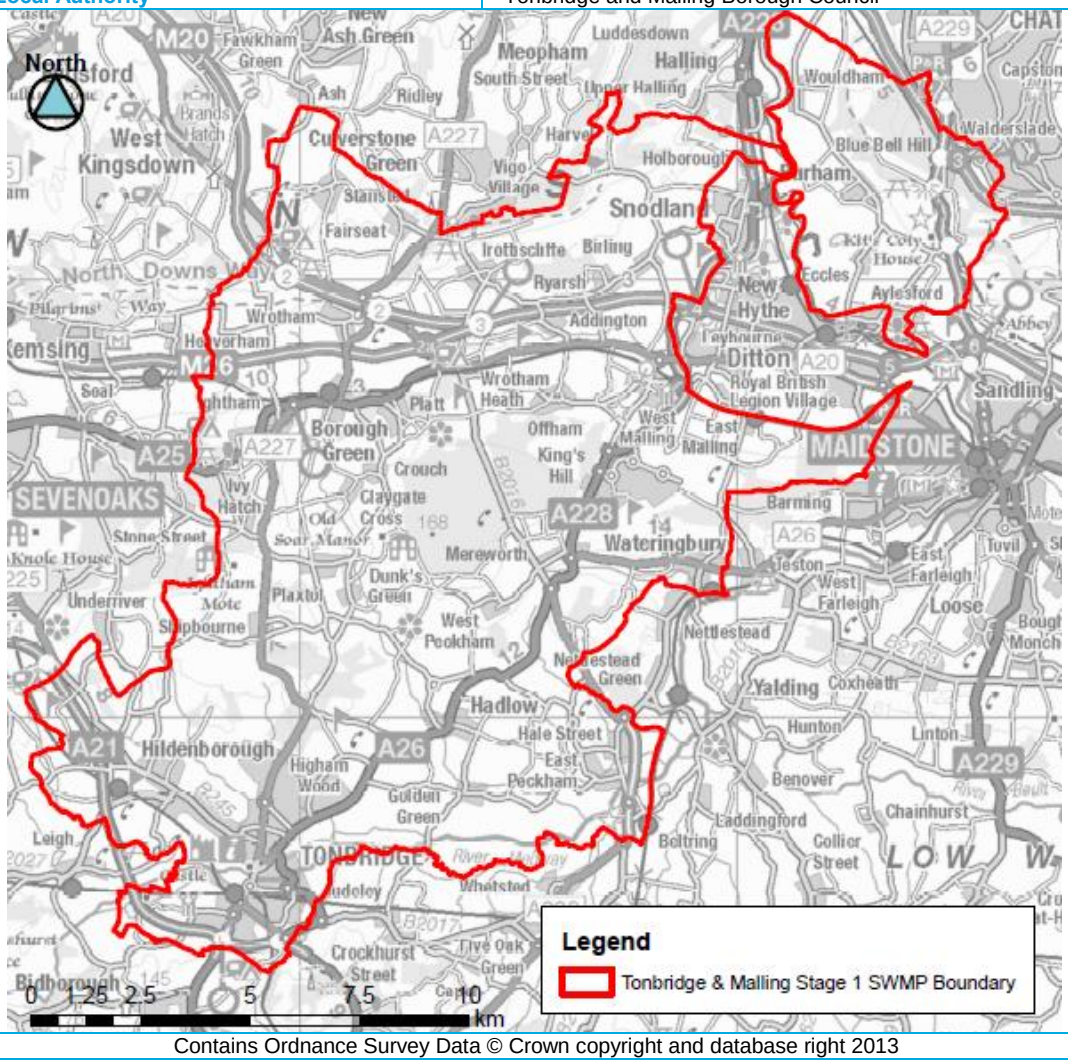

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Figure 1.1 Study Area

1.3.1 Catchment Flood Management Plan (CFMP)

Catchment Flood Management Plans give an overview of the flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years. They consider all types of inland flooding, and take into account the likely impacts of climate change, the effects of how land is used and managed. Tonbridge and Malling area falls within two CFMP's as illustrated in Figure 1.2. It is important that work undertaken within the borough is mindful of the flood risk management policies set by these high level strategic plans.

1. North Kent Rivers CFMP
2. River Medway CFMP

[2] Maidstone and Malling Stage 1 SWMP (March 2012)

There are six pre-defined national policies provided in the CFMP guidance and these are applied to specific locations through the identification of 'Policy Units'. These policies are intended to cover the full range of long term flood risk management options in the catchment that can be applied to different locations. Within any CFMP six standard flood risk management policies has been applied to a policy unit. Figure 1.2 illustrates which policy has been applied to each policy unit:

- Policy 1 – No active intervention (including flood warning and maintenance). Continue to monitor and advice.
- Policy 2 – Reduce existing flood risk management actions (accepting that flood risk will increase over time).
- Policy 3 – Continue with existing or alternative actions to manage flood risk at the current level.
- Policy 4 – Take further action to sustain the current level of flood risk into the future (responding to the potential increases in risk from urban development, land use change and climate change).
- Policy 5 – Take further action to reduce flood risk.
- Policy 6 – Take action to increase the frequency of flooding to deliver benefits locally or elsewhere (which may constitute an overall flood risk reduction, e.g. for habitat inundation).

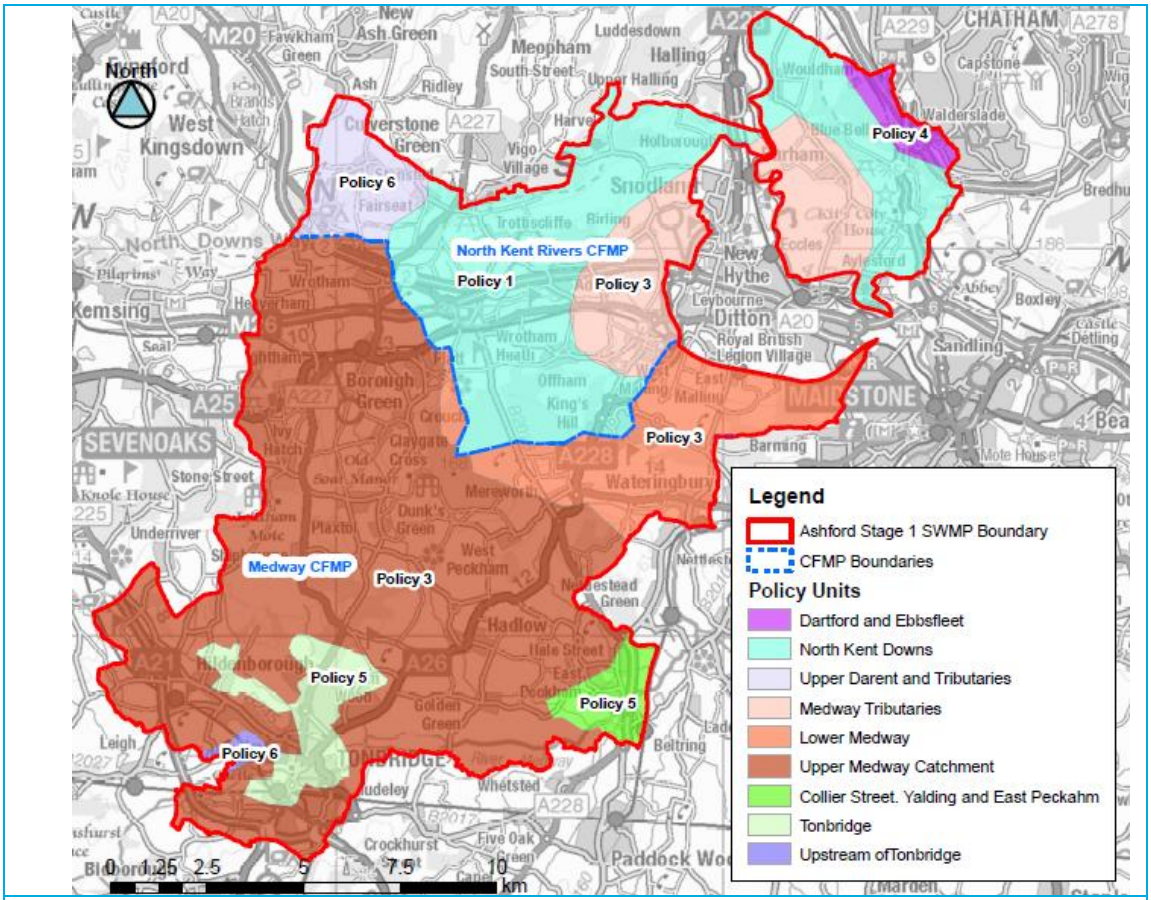

Figure 1.2 CFMP Policy Units and Applicable Policies[3]

1.3.2 Surface Water

Surface water presents a risk throughout Tonbridge and Malling. When there are instances of heavy rainfall and water fails to infiltrate to the ground or enter the drainage system there is an

[3] **Please note,** the boundaries of the CFMP Policy Units have been digitised approximately from the relevant CFMP

increased risk of surface water flooding. Ponding generally occurs at low points in the topography. Historically there have been events attributed to surface water; however the likelihood of flooding is dependent on not only the rate of runoff but also the condition of the surface water drainage system (surface water sewers, KCC Highways drains and gullies, open channels, ordinary watercourses and SuDS).

There are two sources of information available from the Environment Agency, relating to the identification of potential surface water flood risk in Tonbridge and Malling. These are:

- Areas Susceptible to Surface Water Flooding (AStSWF) - Since July 2009, these maps have been available to Local Resilience Forums and Local Planning Authorities, and provided a starting point in understanding the broad areas where surface water flooding is likely to cause problems
- Flood Maps for Surface Water (FMfSW) - these followed on from the AStSWF maps and provide a more realistic representation than the AStSWF maps in many circumstances. The Environment Agency considers this to be the national source of information[4].

It should be noted that the Environment Agency are currently updating national surface water mapping and will soon be releasing the Updated Flood Map for Surface Water (UFMfSW). The UFMfSW aims to provide an improvement on the representation of surface water flood risk across England and Wales. At the time of writing this report, the UFMfSW was being reviewed by the LLFA. Kent County Council's review period began in December 2012 and ends in June 2013. The UFMfSW are due to be released by the end of 2013. Therefore, for the purposes of this report the FMfSW datasets have been used.

1.3.3 Watercourses

Main Rivers

'Main River' is a legal term used to classify watercourses that have the potential to cause significant flooding. The Environment Agency has permissive powers to carry out maintenance and improvement on these rivers. The Stage 1 SWMP makes reference to Main Rivers throughout the report. However, it is important to note the focus of the study is local flooding issues relating to surface water and / or a combination of flooding sources. Table 1-1 describes the list of Main Rivers, which are managed by the Environment Agency within Tonbridge and Malling.

Table 1-1 List of Main Rivers

CFMP	Watercourse
North Kent Rivers	Tidal Medway
	Snodland Millstream
	Aylesford Stream
Medway	River Medway
	River Bourne
	Alder Stream
	Coult Stream
	Hilden Brook
	Hawden Stream
	Tonbridge Mill Stream
	Pen Stream (Upper)

Ordinary Watercourse

Ordinary watercourses are watercourses that are not designated as Main Rivers, and are usually the smaller tributaries of them. KCC, Tonbridge and Malling Borough Council and Internal Drainage Boards[5] have permissive powers to carry out works on ordinary

[4] Environment Agency (2012) Flooding from Surface Water

[5] An Internal Drainage Board's permissive powers pertain to those ordinary watercourses within their boundaries.

watercourses and also have responsibilities in relation to consenting and enforcement. Within Tonbridge and Malling borough, there are two Internal Drainage Boards[6], see Figure 1.3

- Upper Medway Internal Drainage Board (dealing with upland water and fluvial flooding in the River Medway).
- Lower Medway Internal Drainage Board (dealing with lowland water and mainly tidal flooding in the River Medway).

The flooding mechanism for ordinary watercourses is similar to flooding from rivers. Due to the small nature of ordinary watercourses and the sometimes complex drainage mechanisms they may have (such as sluice gates, weirs and pumps), the risk can be difficult to assess. However, ordinary watercourses are generally considered to be low risk systems that do not pose a flood risk on the same scale as main rivers; however they still pose a local flood risk.

There a number of ordinary watercourses within Tonbridge and Malling borough, specifically in the mid (along the M20) and southern reaches, where drainage is complex and one severe rainfall event can cause flooding on a number of ordinary watercourses simultaneously; a flood event can be exacerbated if it is combined with high levels on Main Rivers.

Riparian Owners

If you own land adjoining a watercourse, you have certain rights and responsibilities, and in legal terms you are a 'riparian owner'. Some of your responsibilities include:

• Maintaining river beds and banks;

• Allowing the flow of water to pass without obstruction; and

• Controlling invasive alien species such as Japanese knotweed.

Riparian owners should read the Environment Agency publication ‘Living on the Edge’ (2012) to find out more information about their responsibilities.

[6] http://www.medwayidb.co.uk/

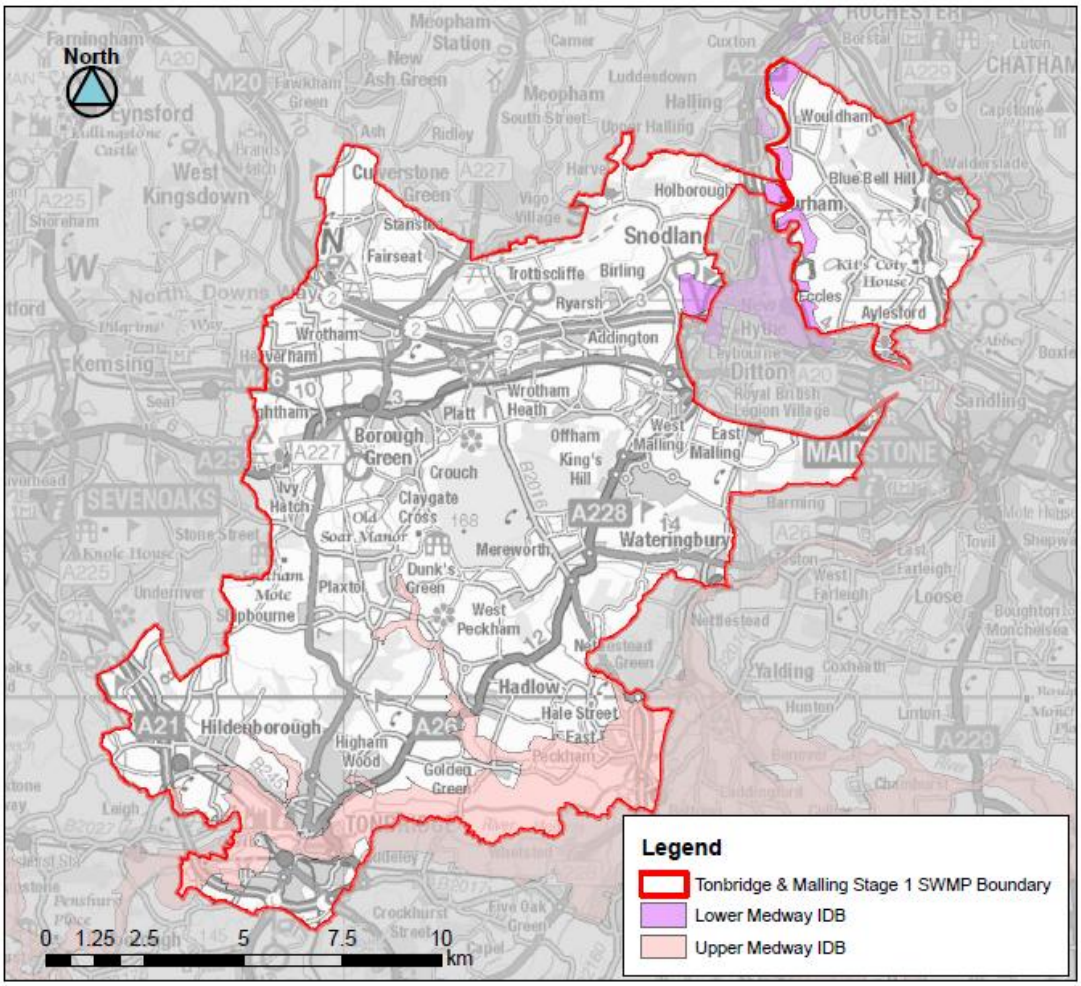

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Figure 1.3 Location of IDBs within Tonbridge and Malling

1.3.4 Sewers

Southern Water is responsible for the majority of sewers in this area. Thames Water covers a small area west of Wrotham (Drainage Area 01 and Drainage Areas 02, see Section 2.5 for further details on Drainage Areas). Data was provided from both utility companies and describes various sewer types located within Tonbridge and Malling:

- Combined
- Foul
- Treated effluent
- Surface Water

Records show that the majority of sewers within the Tonbridge and Malling study area are located in urban areas, such as Tonbridge Town (foul and surface water). Predominantly the sewers within Tonbridge and Malling are classified as foul.

There are sewer models available from Southern Water for Tonbridge and Malling borough. The location data was requested but it was not available at the time of writing this report. There were no sewer models indicated as being available from Thames Water for sewers within Tonbridge and Malling.

1.4 Using this report

Use Table 1-2 to find the information that you need.

Table 1-2 Report layout

Section	Description of contents
1. Introduction	This section defines objectives of the stage 1 SWMP and describes the background of the study area.
2. Preparation	This section provides a summary of the key partners and consultation, data collected and a brief summary of the historic flooding collected. It introduces the source-pathway-receptor model and outlines how local sources of flood risk have been assessed.
3. Sustainable Drainage	Provides details on the suitability of SuDS within Tonbridge and Malling.
4. SWMP Action Plan	Provides details of the generic and location specific Action Plan and potential funding opportunities.
Appendix A Data Review	Provides a list of the data provided by the key partners for use in this project and its applicability to the Stage 1 SWMP.
Appendix B Detailed Summary Sheets and Mapping	The summary sheets give a brief description of the source pathway receptor model within individual drainage areas, of historic flooding and location specific actions for each individual drainage area. The mapping illustrates historical flooding.
Appendix C Flood History Table	A table recording flood history data provided by the key partners, describing : - Receptor - Date (Month/ Year) - of the flood event, if provided - Location (Area/Road/ Street etc) - Source - perceived source of flooding - No. of properties affected - Source supplied data (organisation) - Source supplied data (report) - Comments - any additional comments provided within the data
Addendum 1	KCC Highways Issues - A table of historic records highlighted during the analysis of data received from the key partners that for the most part solely related to KCC Highways. This Addendum is to be included within the report at the discretion of KCC.
Addendum 2	Southern Water Issues - A table of historic records that require further investigation from Southern Water. This Addendum is to be included within the report at the discretion of KCC and Southern Water.

2 Preparation

2.1 Partnership Approach

Local flooding cannot be managed by a single authority, organisation or partner; all the key organisations and decision-makers must work together to plan and act to manage local flooding across Tonbridge and Malling borough. Many organisations have rights and responsibilities for management of local flooding, KCC are the designated Lead Local Flood Authority (LLFA). Although Kent County Council has commissioned this project, the key partners have been consulted with at appropriate stages in the study. Working in partnership encourages co-operation between different agencies and enables all parties to make informed decisions and agree the most cost effective way of managing local flood risk across Tonbridge and Malling borough over the long term. The partnership process is also designed to encourage the development of innovative solutions and practices; and improve understanding of local flooding.

2.1.1 Key Partners

Partners are defined as organisations with responsibility for the decision or actions that need to be taken to manage local flood risk. The key partners involved in this project are:

- Tonbridge and Malling Borough Council
- Kent County Council
- Kent County Council - Highways
- Lower Medway IDB
- Upper Medway IDB
- Environment Agency
- Southern Water
- Thames Water

The Stage 1 SWMP was undertaken to determine whether there are any local flood risks within Tonbridge and Malling borough that may require further work and / or investigation. In fulfilling this objective, the decision was made only to consult with the key partners noted above. Future studies that may be undertaken at a more local level will seek to widen this consultation to include parish and / or town councils, other community groups or local people. During the course of the study the key partners were involved in the following engagement events:

- Data gathering exercise and one to one meetings with each of the key partners
- Action plan workshop

2.2 Data Collation and Review

JBA Consulting met with each key partner to discuss their knowledge and experience in relation to all sources of flooding across the study area. Data was collected from all key partners and the quality of the data was assessed and uncertainty or perceived weakness described and discussed with the key partners. A table summarising the data collected is located in Appendix A. A vast array of information was made available to inform the SWMP, including:

- The Environment Agency historical flood maps, FMfSW and LIDAR were used to delineate the individual drainage areas and define the receptive receptors within Tonbridge and Malling.
- Records of historic flooding from KCC, KCC Highways, Tonbridge and Malling Borough Council, IDB's, Thames Water and Southern Water (were used to identify areas where actions are required within Tonbridge and Malling). It should be noted that many of the historic records, specifically from KCC Highways only went back as far as 2008.

- Bedrock geology and superficial soils were informative when delineating individual drainage areas and also used to determine the applicability of SuDS type across the Tonbridge and Malling borough.
- The National Receptor Database (NRD) was used and was found to be informative when quantifying risk and prioritising potential measures and actions. The NRD was not used to determine numbers potentially affected by flooding but rather to indicate the critical infrastructure that may be impacted by local flooding.
- Other data utilised included the Tonbridge and Malling SFRA[7], and anecdotal information collected while meeting with the key partners.

2.3 Historical flooding

Each Risk Management Authority (RMA) provided data on incidents of historical flooding. The records begin in 1958 to the present; there are a number of records that do not have a date specified. Historical flooding maps are displayed in Appendix B and the flood history tables are located in Appendix C. These have been compiled to provide further details on each recorded event received from all RMAs.

Historical flooding from Main Rivers has been described within the flood history table and displayed on the historical flooding maps, where key partners have provided records. It should be noted that Main River flooding has been included within this report to determine where a combination of issues (surface water, sewer, and groundwater) require an action. However, if an issue is solely related to Main River flooding, an action has not been prescribed as this is outside the remit of the Stage 1 SWMP. Actions to address flood risk from Main Rivers are considered within the Catchment Flood Management Plans (CFMPs).

A summary of historical flooding is noted below. Although the sources of flooding have been segregated into fluvial, surface water and sewers the issues highlighted within the summary may have originated from a number of sources.

Fluvial

The River Medway (Main River) is the source of greatest risk within Tonbridge and Malling, specifically in the south of the borough. The Leigh Barrier was built in 1981; it is designed and operated to defend Tonbridge. In lower order events it may confer benefits to communities further downstream..

The River Bourne (Main River) poses a risk to communities between Borough Green and Hadlow. The Hilden Brook (Main River) and Hawden Stream (Main River) have flooded Hildenborough in the past; records suggest this may be due to capacity issues in the watercourse. Within Tonbridge itself, the Pen Stream Upper (Main River) and the Tonbridge Mill Stream (Main River), are sources of fluvial flood risk, specifically where these join with the River Medway. The Coult Stream and the River Medway (Main Rivers) have flooded East Peckham in the past.

Ordinary watercourses have flooded areas of Wateringbury, Pizien Well and Mereworth. The issues at these locations are reported to be linked to insufficient maintenance, due to riparian owners not being aware of their duty to maintain the watercourse[8]. In Ryarsh there is a highway culvert screen which has been identified as requiring regular maintenance it can result in flooding which has affected properties in the past. Records also attribute flooding to insufficient capacity within watercourse or their culverts. Ordinary watercourses at Birling and West Malling have been recorded as flooding historically where the flows exceeded the channel capacity.

In Ightham, the Busty (ordinary watercourse) regularly floods. Historic reports cited obstructions to watercourse channel in the form of low footbridges and service pipes which tend to obstruct flows as the cause of some issues in the area.

[7] Tonbridge and Malling Strategic Flood Risk Assessment (Stage 2 Report, August 2006)
[8] Environment Agency, "Living on the Edge"

Surface Water

The historical records are dispersed throughout the borough. It should be noted that records from KCC Highways are from the period of June 2008 to January 2013. There are limited records of older events from other key partners, the majority of records were provided from Kent County Council Highways. However Tonbridge and Malling borough did provide a detailed report pertaining to Burham Eccles and Wouldham Road Flooding (22/03/2013).

For the most part surface water flooding could be attributed to heavy rainfall overloading carriageways, drains / gullies. In other instances, the cause of flooding was perceived to be from blocked drains / gullies or due to high levels in within receiving watercourses impeding free discharge from surface water drains and gullies. There are recorded issues where the camber of the road does aid the efficient draining of surface water; an example of this has been described on Pilgrims Way. Surface Water flows from higher and agricultural land has been described silting drains and gullies causing blockages and subsequent surcharging during heavy rainfall, examples of this has been recorded on Rochester Road at the bottom of Alex Hill between the junction of Court Road and Bull Lane.

The Environment Agency also described that there is regular flooding to West Peckham. The Environment Agency describe that there are no highways drains / gullies present in the area to cope with excess surface water on the roads.

Sewer

Southern Water and Thames Water provided records of historical flooding from 2008 - 2012. Southern Water's data presented the number of events that occurred within a particular post code. An indication was given within the records as to whether the event flooded properties internally, externally or whether it was within the curtilage of a property.

Thames Water provided information of their recorded events based on postcode sectors (TN13 1), and as with Southern Water data, it was indicated whether the flooding was internal / external. The format of data provided from Thames Water dictated that the information was illustrated in large postcode sector polygons (see Appendix B). Further clarification was sought from Thames Water in a one to one meeting. Following this meeting, it was concluded there were no specific flood events highlighted within Tonbridge and Malling borough in the area covered by Thames Water.

Southern Water records described flooding was predominantly as a result of the hydraulic overload of a sewer or an overloaded pumping station. There are number of sewer flood incidents recorded in Tonbridge Town and in Hildenborough.

Where further information was provided upon discussion with the key partners, this was added to the comments within the Flood History Table in Appendix C. Southern Water has been made aware of any specific locations where historic records indicate that a combination of sources may affect sewer flooding.

2.4 Source Pathway Receptor

The Source-Pathway-Receptor concept can be used to highlight the processes that influence the flood risk in a given area. A simple schematic is illustrated in Figure 2.1.

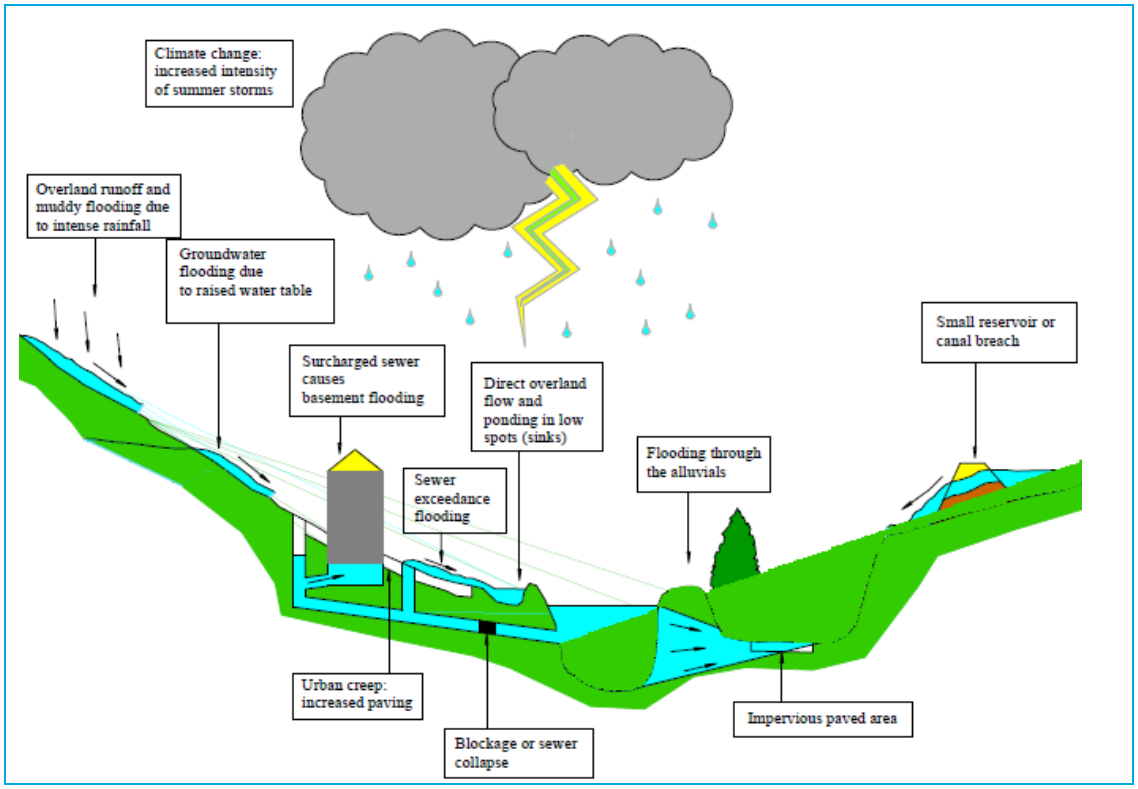

Figure 2.1 Source-Pathway-Receptor

The sources of flood water in the study catchment are summarised below:

- Heavy rainfall resulting in surface water runoff and overloaded sewers
- Surface water (blocked drains / gullies)
- Rivers - overtopping of river banks
- Groundwater[9]

The pathways for flooding are the sewer networks, drains and gullies, highways / roads and river networks within Tonbridge and Malling Further detail on pathways is located in the summary sheets in Appendix B (see section 2.5 for discussion on summary sheets).

Receptors within the Tonbridge and Malling study area were highlighted where supplied historic records indicate groupings of flood incidents in particular locations. In addition the FMfSW - 1 in 200 year (deep) was used to indicate where potential receptors may be located. It should be noted that the location of the receptor is not intended to specifically pinpoint an exact location (i.e. house, business or street) as a receptor. Rather, a receptor has been used to highlight an area, such as a settlement, for example, see Figure 2.2.

[9] It should be noted from the data provided and following consultation with the key partners, it is difficult to ascertain if a source of flooding is from groundwater. This is because flood risk may as a result of a combination of sources, or a culverted watercourse may have been mistaken for a spring or underground stream.

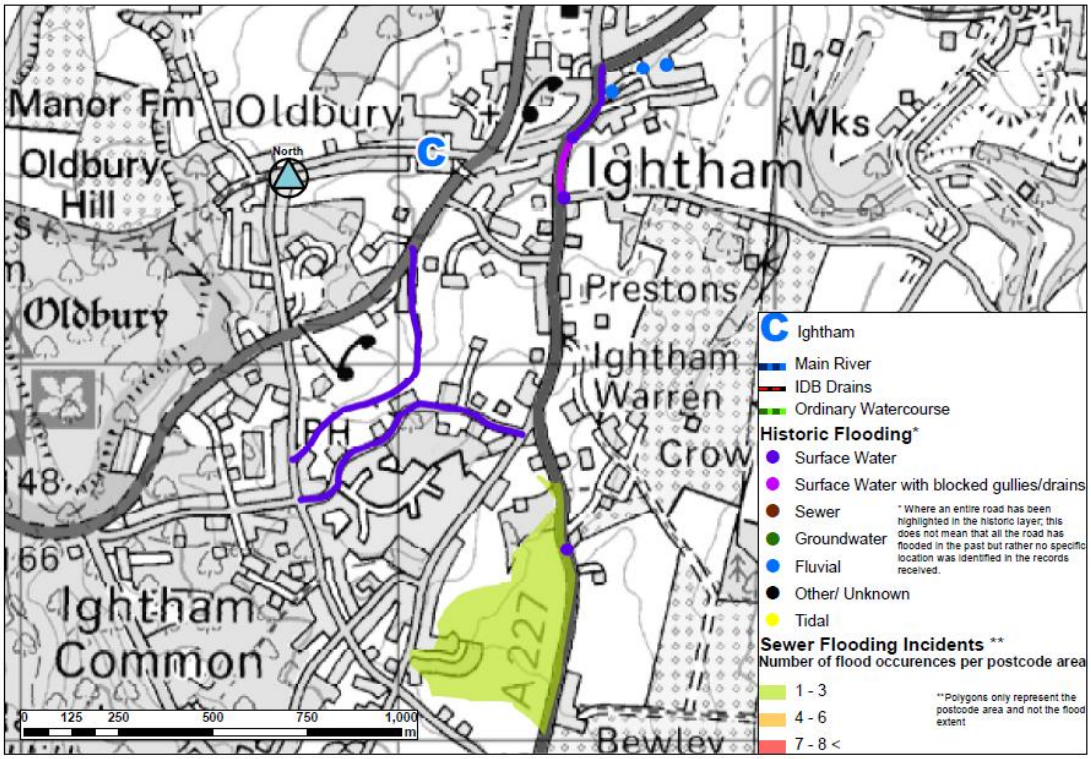

Figure 2.2 Example of a Tonbridge and Malling Stage 1 SWMP Receptor

2.5 Communicating and mapping the risk

In order to consider the study area in more detail and enable partners and other interested parties to be able to focus in on certain areas of interest (aside from the whole SWMP area), Tonbridge and Malling borough has been split into drainage areas, see Table 2-1 and Figure 2.3. The drainage areas have been split using the topography of the landscape, historic events, mapped outlines and Flood Maps for Surface Water (1 in 200-year, (deep). In addition to historical records of flooding and the FMfSW, IDB boundaries (which are catchment based) and geological boundaries have also been used. Where appropriate these drainage areas have been used to influence KCCs Local Flood Risk Management Strategy policy units.

Table 2-1 Tonbridge and Malling Drainage Areas

Drainage Area	Location
DA01	Tonbridge and Malling Rural North
DA02	Tonbridge and Malling Rural Mid
DA03	Tonbridge and Malling Rural South
DA04	Tonbridge Town and Hildenborough

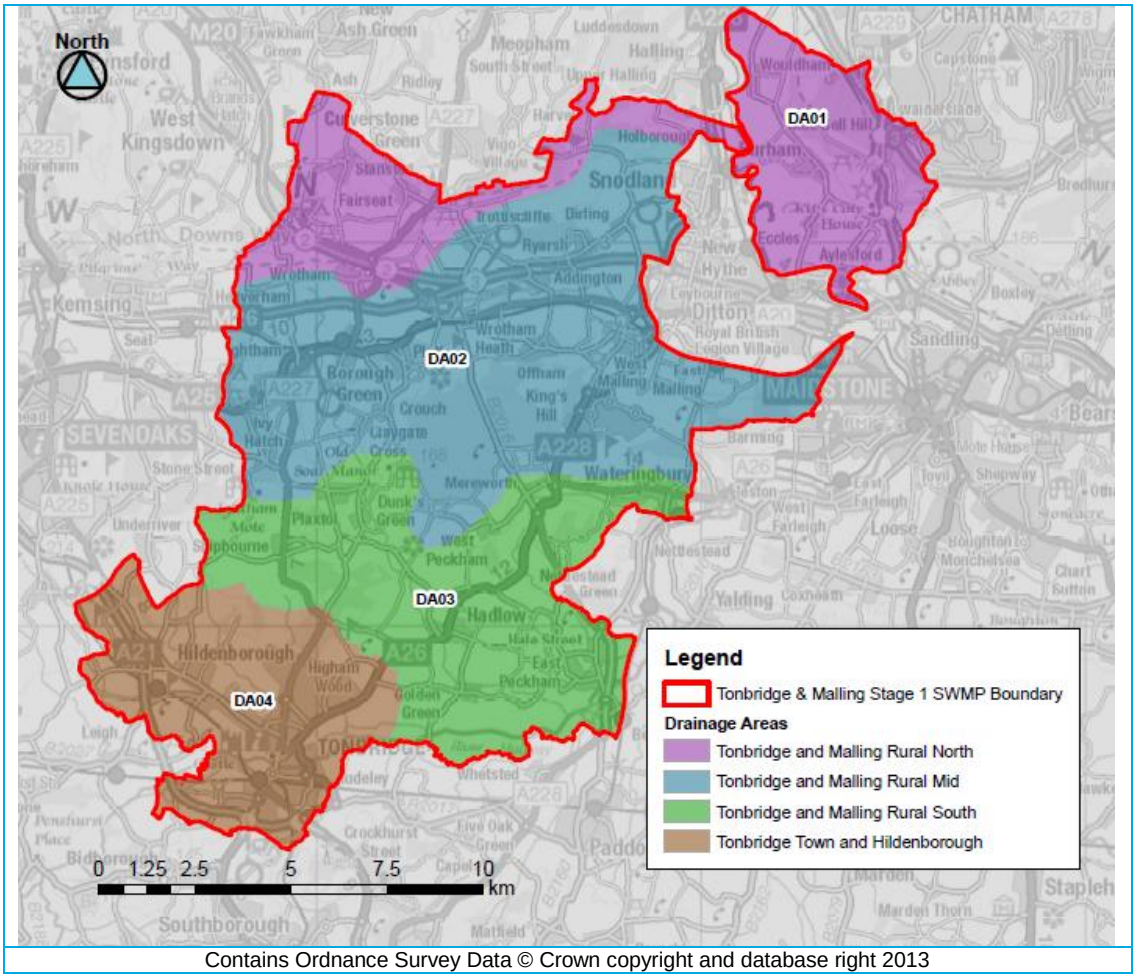

Figure 2.3 Tonbridge and Malling Drainage Areas

Each drainage area has been described in detail in a corresponding Summary Sheet in Appendix B. Each summary sheet provides an overview of:

- the drainage area;
- its size;
- drainage assets i.e. main river, ordinary watercourse and sewer network; and
- highlights the source-pathway-receptor model within each area;

A Historic Flooding map is provided for each Drainage area to accompany the summary sheet. This map details the location of the historic flood data as provided by the key partners and illustrates the location of the IDB Boundaries within Tonbridge and Malling Borough.

In addition, each drainage area has a corresponding flood history table, which provides details of all recorded historic data, as provided by the key partners. The flood history tables are located in Appendix C, they include details on the:

- year of the incident;
- general location;
- perceived source as per the data provided;
- whether property was recorded as being affected; and
- any additional comments provided within the historic datasets.

3 Sustainable Drainage Systems

3.1.1 Feasibility of SuDS in Tonbridge and Malling

The choice of SuDS technique is site-specific, depending on the nature of the proposed development and local conditions. The suitability of areas for different types of SuDS techniques is often determined by existing land use and in the case of SuDS which involve infiltration, soil type, underlying geology and ground water conditions need also to be considered.

When considering infiltration options, groundwater source protection zones must also be considered. The Environment Agency's website provides a web based resource in order to check the Groundwater Source Protection Zone in their "What's in my backyard" section[10]. There are Zone I - Inner protection Zones to Zone III - Total Catchment within Tonbridge and Malling study area, see Figure 3.1. The Environment Agency have defined Source Protection Zones (SPZs) for 2000 groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk, Figure 3.1 shows three main zones (inner, outer and total catchment) and a fourth zone of special interest which may apply to a groundwater source.[11]

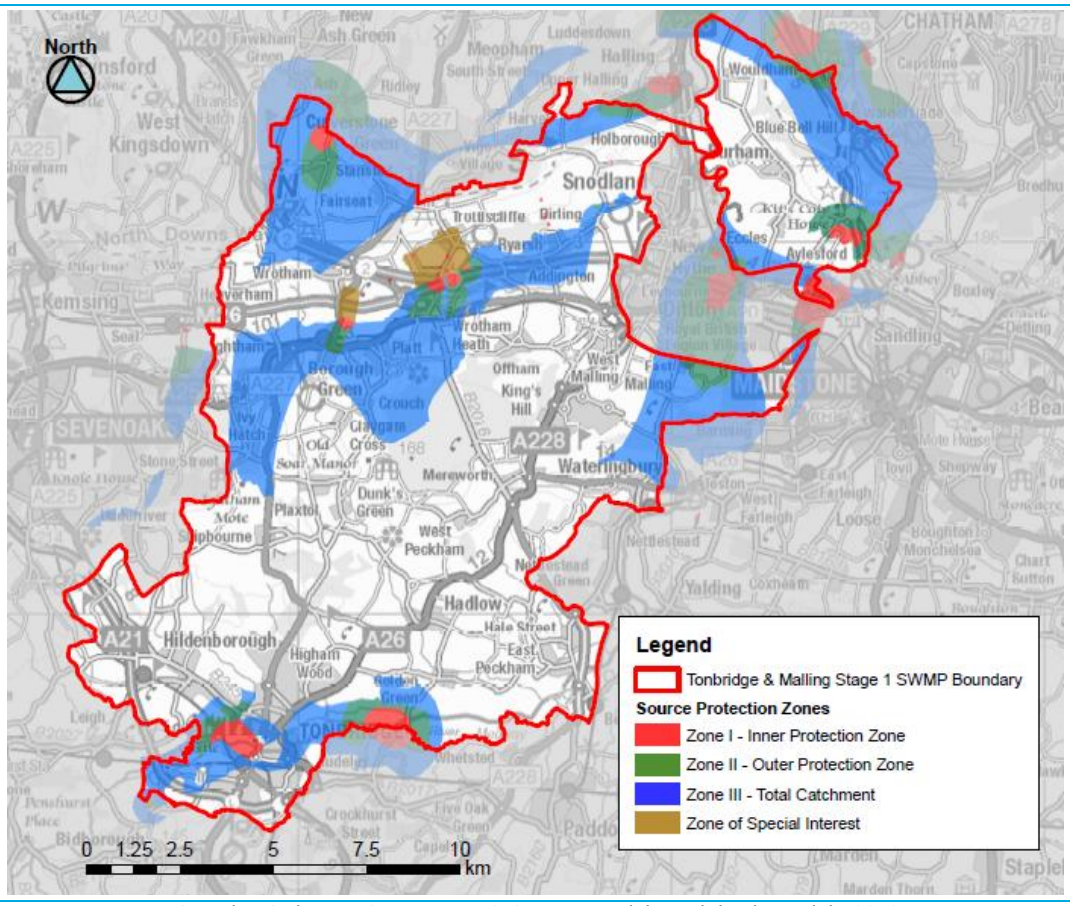

Figure 3.1 Groundwater Source Protection Zone

Tonbridge and Malling borough comprises of several different geologies. Areas which are underlain by low permeability material, for example clay, may not be suitable for infiltration

[10] Environment Agency Interactive Maps

[11] Environment Agency Groundwater source protection zones

Please note that the fourth zone SPZ4 or 'Zone of Special Interest' was previously defined for some sources. SPZ4 usually represented a surface water catchment which drains into the aquifer feeding the groundwater supply (i.e. catchment draining to a disappearing stream). In the future this zone will be incorporated into one of the other zones, SPZ 1, 2 or 3, whichever is appropriate in the particular case, or become a safeguard zone.

drainage. If a discharge is proposed within a source protection zone then additional information may be required to demonstrate that there is not an unacceptable risk to groundwater and to the surrounding environment. Additional information and advice can be found on the website www.environment-agency.gov.uk and within the document Groundwater protection: Principles and practice (GP3)[12].

New development should also seek to incorporate SuDS, for example through green roofs and walls, rainwater recycling, permeable paving and soft landscaping to reduce surface water runoff where feasible and appropriate to the size and scale of the development. The hierarchy of surface water disposal is as follows

1. The use of SuDS techniques, appropriate to the location, size and type of development; further details can be found in the SuDS Manual C697 (2007) published by CIRIA.
2. Discharge to watercourse.
3. Discharge to surface water sewer
4. Discharge to combined sewer.

Tonbridge and Malling Borough Council have developed guidance to integrate sustainable surface water management into developments across Tonbridge and Malling Borough[13]. This document provides a description of SuDS to consider within developments and what issues need to be considered. It also provides a list of useful contacts such as:

- Environment Agency
- Construction Industry Research Information Association (CIRIA)
- Livingroofs.org
- South East Water
- Southern Water
- Thames Water
- Kent County Council: Kent Design Guide.

Tonbridge and Malling borough have also produced within their Local Development Framework documents', a Green Infrastructure Report which sets out means and locations to consider implementation of green infrastructure within the borough.[14]

SuDS Developers should also consider and have regard for the Kent Design Guide[15]. This document includes a technical appendix on 'Water Efficient Homes" which refers to SuDS. The establishment of a SuDS Approving Body (SAB) is to be set up in county, borough or unitary local authorities. Kent County Council is designated the SuDS approving body (SAB) for Tonbridge and Malling Borough Council. It should be noted that a clear timetable for implementation of the new responsibilities for SABs is still pending [16]. The duties of the SAB will be to approve drainage systems for new and redeveloped sites before construction can commence. Additionally the SAB will ensure that proposed drainage systems will meet the new National Standards for design, construction, operation and maintenance. The SAB will then be responsible for approving, adopting and maintaining drainage plans and SuDS schemes that meet the National Standards.

[12] Environment Agency (2013) Groundwater protection: principles and practice (GP3)

[13] Tonbridge and Malling Water Guide SuDS

[14] LDF: Tonbridge and Malling Green Infrastructure Report – March 2009

[15] The Kent Design Guide

[16] **Please note a clear timetable for implementation of the new responsibilities for SABs is still pending.**

4 SWMP Action Plan

4.1 Introduction

The SWMP has identified a range of recommended actions for the reduction of flood risk across the Tonbridge and Malling SWMP study area. The Action Plan collates all information undertaken and collated as part of this SWMP study and:

- Outlines the actions required and where and how they should be undertaken;
- Sets out which partner or stakeholder is responsible for implementing the actions and who will support them;
- Provides indicative costs; and
- Identifies priorities.

4.2 Generic Action Plan

Table 4-1 describes the generic actions to be applied throughout all drainage areas (DA01- DA04).

Table 4-1 Generic Action Plan

Ref	Applicable Drainage Areas	Action/Option (What?)	Priority Actions (How?)	Lead Action Owner	Supporting Action Owner(s)*	Priority (When?) **	Indicative Relative Cost
1	All Drainage Areas	Develop and implement a targeted maintenance schedule. KCC, Tonbridge and Malling Borough Council, Lower and Upper Medway IDB, Southern Water and Thames Water should develop and implement a targeted maintenance schedule so that the highway gullies, drains and other drainage assets (including SuDS), watercourses and sewers operate effectively to their design capacity. KCC has maintenance schedules and programmes for gullies. As a priority these should be reviewed in consultation with other partners.	1. Use the Stage 1 SWMP to identify and record where existing drainage infrastructure is, where it drains to and who owns and/or is responsible for maintaining it. Records of assets should be available to all partners.	KCC	EA TMBC, SW, TW, LMIDB, and UMIDB	Quick win	High
			2. Partners to develop a coordinated risk based inspection and maintenance schedule using information in the SWMP (i.e. areas at high risk of flooding, natural flow routes, etc). It should be noted that any change in maintenance regime should be supported by evidence.	KCC	EA TMBC, SW, TW, LMIDB, and UMIDB	Medium Term	Medium

Ref	Applicable Drainage Areas	Action/Option (What?)	Priority Actions (How?)	Lead Action Owner	Supporting Action Owner(s)*	Priority (When?) **	Indicative Relative Cost
			3. Continue to invest in hydraulic improvements, including de-silting, root removal and minor collapse repair, to reduce the risk of property flooding.	KCC	EA TMBC, SW, TW, LMIDB, and UMIDB	Medium Term	Medium
			4. Communicate coordinated maintenance activities to the public to manage expectations.	KCC	EA TMBC, SW, TW, LMIDB, and UMIDB	Long Term	Low
2	All Drainage Areas	Raise awareness within the LLFA, partner organisations, developers and the general public regarding the policies for surface water management, specifically SuDS, within existing evidence base documents[17]: Strategic Flood Risk Assessment, including the SFRA updates (February 2011) Managing Development and the Environment, DPD, Green Infrastructure Report, March 2009 Adopted Core Strategy Managing Development and the Environment Adopted April 2010 Tonbridge Central Area Action Plan, April 2008	1. Ensure new developments incorporate SuDS in accordance with the NPPF and the requirements of the SuDS Approving Body (SAP) 2. Liaise with key partners regarding opportunities for surface water management, i.e. green infrastructure, where feasible.	KCC, EA TMBC, SW and TW LMIDB, and UMIDB	EA TMBC, SW, TW, LMIDB, and UMIDB	Quick win	Medium
			3. Ensure new developments do not increase the risk of surcharge of sewer network within their catchment. 4. Stakeholder engagement to inform the public about the benefits of rainwater reuse and recycling.	KCC, EA TMBC, SW and TW	LMIDB and UMIDB	Quick win	Medium
3	All Drainage Areas	Raise awareness within the borough of the problems caused by inappropriate disposal of fuel oils to drains and gullies.	Reduce the inappropriate dumping of Fats Oils and Grease by developing and implementing a campaign to educate the public of the impacts on drainage. In addition, consideration, along with stakeholder engagement as to the whether a collection for of Fats Oil and Grease (FOG) within the relevant authority areas, could reduce the inappropriate disposal of FOGs	, SW	EA, and UMIDB, KCC & TMBC[18]	Quick win	High

[17] Tonbridge and Malling Borough Council Local development framework - the Council's local plan

[18] Traditionally water and utility companies take the lead in providing information regarding the hazards relating to the disposal of Fats Oils and Grease, however a partnership approach should now be considered between all key partners, to enable more effective engagement with the public,

Ref	Applicable Drainage Areas	Action/Option (What?)	Priority Actions (How?)	Lead Action Owner	Supporting Action Owner(s)*	Priority (When?) **	Indicative Relative Cost
4	All Drainage Areas	Consider Critical Ordinary Watercourse that may benefit from demaining and / or assigning responsibility to the IDBs.	Liaise with key partners to consider which watercourse would benefit from IDB maintenance.	EA, UMIDB, TMBC	KCC,	Medium Term	Medium
5	All Drainage Areas	Consider a study to investigate the effect of large scale polytunnels on the surface water catchment in Tonbridge and Malling Borough Council	Include study within future schedule of works	EA, TMBC, KCC	Parish Council	Medium Term	Medium
6	All Drainage Areas	Southern Water should endeavour to inform key partners about their sewer models.	Liaise with key partners to determine a method to disseminate information regarding sewer models completed.	SW, KCC	EA	Long Term	Low
7	All Drainage areas	Regulation 17 of the water environment (Water Framework Directive) (England and Wales) Regulations 2003 requires all public bodies, when exercising their functions so far as affecting a river basin district, to have regard for that district's river basin management plan and to any supplementary plans.	All key partners are to be mindful of their obligations under the Regulation 17 of the water environment (Water Framework Directive) (England and Wales) Regulations 2003 and environmental objectives as specified in the relevant River Basin Management Plans when carrying out locations specific actions.	KCC, EA TMBC, SW and TW		Long Term	Low

Priority: Quick win = within 12 months. Short Term = up to 2 years. Medium Term = up to 5 years. Long Term = open ended/indefinite.

4.3 Location Specific Action Plan

Table 4-2 describes the action plan for specific locations. Each action has been defined into its particular drainage area and receptor. Through discussion with the key partners specific actions for this stage of the Surface Water Management Plan were defined. The following should be noted:

- A specific action has not been defined for every receptor
- If an issue has been highlighted, where it is perceived a Main River is the sole cause, this has not been included within the Location Specific Action Plan. However, where a number of combined sources are reported (i.e. Main River, surface water and/ or sewer), an action has been allocated.

It should be noted; generally where issues have been solely related to either KCC Highways or Southern Water these have been noted in a separate record/ addendum and passed to the relevant body to investigate and follow up with an action should it be required. Where KCC Highways or Southern Water issues have been discussed with key partners during the Data Validation and Action Plan Workshop and an action has been decided these have been highlighted below within the Location Specific Action Plan.

Table 4-2 Location Specific Action Plan

DA01 - Tonbridge and Malling Rural North

DA	Area of benefit	Location of action	Action	Benefits	Next Steps	Action Owner	Supporter	Priority *	Indicative Cost (£) **
DA01	Wrotham (D)	Bull Lane	*Regular historic records of flooding to road (no properties affected) but results in substantial flooding.*						
			Provision of soakaway to alleviate flooding has been programmed for 2013/14	Bull Lane, improved driving conditions	Included within KCC Highways programme of works	KCC	TMBC	Short-term	Up to 50k
DA01	Pratling Street (K)	Pratling Street	*Identified as a drainage hotspot by KCC Highways and Environment Agency link the problems of flooding to unnamed watercourses that flow along Pratling Street.*						
			Complete a study to investigate where possible flood alleviation measures for local flood issues may be feasible		Included within programme of works	TMBC, KCC	EA, SW	Medium Term	Up to 50k

DA02 - Tonbridge and Malling Rural Mid

DA	Area of benefit	Location of action	Action	Benefits	Next Steps	Action Owner	Supporter	Priority *	Indicative Cost (£) **
DA02	Ightham (C)	Busty Lane, Durlings Orchard, Bates Hill, The Street	*Environment Agency and TMBC historic records suggest flooding is a regular occurrence from an ordinary watercourse which has affected properties in the past. Works have been completed to alleviate this issue but TMBC suggests the flow on the watercourse is still obstructed. In addition to this, there are records of surface water issues along Bates Hill and The Street. Data indicates that there has been flooding to properties.* *Following the Data Validation and Action Plan Workshop (14/03/2013) and with the EA (16/04/2013), it was explained that channel maintenance is an issue at this location. Footbridges, across ordinary watercourses, hold low lying service pipes on their soffits, which are easily blocked. An integrated study is required.*						
			A CCTV study to investigate the condition of drains and gullies and assets on the ordinary watercourse.	Identify potential blockages	Include study within future schedule of works	KCC, TMBC. EA,	SW	Short term	Up to 50k
			Complete an integrated study to investigate possible flood alleviation measures for both fluvial and surface water.	Protection to properties and local roads and land.	Include study within future schedule of works	TMBC, KCC	EA, SW, riparian owners	Medium term	Up to 50k
DA02	Borough Green (E)	Wrotham Road	*Historic records suggest this is an area of regular flooding from several sources. May be an opportunity for a partnership approach to undertake an integrated catchment model / study. Following the Data Validation and Action Plan Workshop (14/03/2013) and with the EA (16/04/2013), it was explained that TMBC have done all they can, and there have been a lot of improvements to the watercourse however there are still some outstanding action as the carrier drains not completely clear.*						
			Complete an investigation to assess the condition of drains and gullies.	Identify potential blockages	Include study within future schedule of works	KCC	TMBC	Short term	Up to 50k

DA	Area of benefit	Location of action	Action	Benefits	Next Steps	Action Owner	Supporter	Priority *	Indicative Cost (£) **
DA02	Borough Green (E)	Wrotham Road	Complete an integrated study to investigate where possible flood alleviation measures for both fluvial and surface water issues may be feasible.	Protection to properties and local roads and land.	Include study within future schedule of works	TMBC, KCC	EA, SW, Network Rail	Short term	Up to 50k
DA02	Ryarsh (H)	Ryarsh	*Fluvial flooding associated with the Leybourne stream and Birling Stream appears to be a regular problem and does affect properties. Issues are potentially linked to maintenance but also general capacity.* *Following the Data Validation and Action Plan Workshop (14/03/2013) and with the EA (16/04/2013), a trash screen, in the area, which is located in a cage, was highlighted as a health and safety issue.*						
			Liaise with local Parish Council to investigate possible measures to alleviate issues at this location	Properties within Ryarsh	Include study within future schedule of works	TMBC, Parish Council	KCC and EA	Short term	Up to 50k
DA02	Birling (I)	Bull Road	*Fluvial flooding is a regular problem but does not affect properties. Issues appear to be linked to maintenance.*						
			Monitor the situation and should future flooding occur, action should be taken.	Road and land along Bull Road	Include study within future schedule of works	TMBC	KCC, EA	Short term	Up to 50k

DA03 - Tonbridge and Malling Rural South

DA	Area of benefit	Location of action	Action	Benefits	Next Steps	Action Owner	Supporter	Priority *	Indicative Cost (£) **
DA03	Wateringbury (D)	Mill Lane	*Sluice to a privately owned online pond is prone to debris accumulation which can prevents water from passing through freely and there are records of cottages and residential mill buildings being affected by flooding.*						
			Monitor the situation and should future flooding occur, enforcement action should be taken.		Include study within future schedule of works	KCC, SW, , TMBC	EA	Long Term	Up to £50k
DA03	Hadlow (E)	Maidstone Road	*Fluvial flooding from Palmers Brook is recorded as flooding and affecting the Maidstone Road and properties.* *The Environment Agency reported that the Palmers brook may have been responsible for flooding Hadlow in 1968; subsequently the Hadlow culvert was added as an improvement. A blockage of this culvert in 2002/3 flood resulted in several houses being flooded.* *TMBC are currently investigating this issue.*						
			Investigate the condition of assets on Palmers Brook and conveyance of flow.	Maidstone Road, improved driving conditions and reduce risk to properties	Include study within future schedule of works	TMBC, KCC	EA, KCC	Medium term	Up to £50k
DA03	Hale Street (G)	Hale Street	*Regular flooding reported from the Coult Stream and ordinary watercourse.* *A resident culverted the watercourse with a twin pipe culvert. Blockage of the pipe caused flooding. There are also issues with service pipes crossing the watercourse and collecting debris.*						
			Monitor the situation and should future flooding occur the action below should be taken.		Include study within future schedule of works	KCC, SW, EA, TMBC		Long Term	Up to £50k
			Complete a CCTV Survey to investigate the condition of assets.		Include study within future schedule of works	TMBC, KCC, UMIDB	EA, SW	Long Term	Up to 50k

DA	Area of benefit	Location of action	Action	Benefits	Next Steps	Action Owner	Supporter	Priority *	Indicative Cost (£) **
DA03	East Peckham (G)	Hatches Lane	*There are reports of flooding from fields and possibly also the Coult Stream. UMIDB, TMBC and EA all note flows are not all captured by the dam at East Peckham. There is a potential flow route which can bypass the dam (Hatches Lane) and flood 50 properties.* *EA have completed a study to investigate the drainage pathways from the field.*	Improve protection to East Peckham		TMBC, KCC, EA and UMIDB, Landowner		Medium Term	Up to 50K
			Investigate the methods improving surface water management on this road in co-operation with key partners, including KCC Highways. Consider the camber of the road within the study.		Include study within future schedule of works	KCC, SW, EA, TMBC		Medium Term	Up to £50k

DA04 -Tonbridge Town and Hildenborough

DA	Area of benefit	Location of action	Action	Benefits	Next Steps	Action Owner	Supporter	Priority *	Indicative Cost (£) **
DA04	Hilden-borough (south) (C)	Leigh Road	*Historic flooding from a number of perceived sources, fluvial and sewer, records do not suggest property has been flooded internally*. *The Environment Agency has carried out culvert improvement works on the Hawden Stream since flood of properties occurred in 1968.*						
			Monitor the situation and should future flooding occur action should be taken.		Include study within future schedule of works	KCC, SW, EA, TMBC		Long Term	Up to £50k
			Investigate the requirement for PLP scheme for example – tanking, raising airbricks and damp proof course and raising threshold levels. This may be an opportunity for a partnership approach.	Improved protection for residents at Leigh Road	Include study, ending event within future schedule of works	SW, TMBC, UMIDB	KCC, EA	Short Term	Up to 100k
DA04	Trench Wood (F)	White Cottage Lane	*Regular surface water problems reported and the road has been highlighted as a drainage hotspot. Flooding occurred as a result of a poorly maintained soakaway. A soakaway clearance is planned within the capital works for 2013/2014.*	Improved conveyance through gullies	Included within 2013/2014 capital works programme	KCC	n/a	Short term	Up to 50k

DA	Area of benefit	Location of action	Action	Benefits	Next Steps	Action Owner	Supporter	Priority *	Indicative Cost (£) **
DA04	Higham Wood (G)	Darwin Drive/Grange Farm, Tonbridge	*Records suggest regular flooding here due to fluvial (Pen Stream (Upper)) and surface water sources. TMBC carried out an investigative report in 2004. Following the Data Validation and Action Plan Workshop (14/03/2013) and with the EA (16/04/2013), it was explained that there are residual problems connected to Penn Stream (Upper) high levels in the watercourse can affect surface water draining to the watercourse. The Environment Agency is fitting a trash screen which will improve conveyance.*						
			Complete a study to consider possible methods to improve surface water drainage in the area	Improved road drainage	Include study within future schedule of works	KCC, EA, TMBC	SW,	Medium term	Up to 50k
DA04	Tonbridge Centre (I)	Baltic Road and Quarry Hill Road	*Historic record is located at the western end of Baltic Road towards Quarry Hill Road (drainage hotspot). There is also a sewer incident recorded in this postcode area. Following the Data Validation and Action Plan Workshop (14/03/2013) and with the EA (16/04/2013), it was explained there is a Southern Water tank located on Baltic Road which has caused issues in the past.*						
			Investigate the condition of the underground tank at Baltic Road and include in a regular maintenance schedule		Include study within future schedule of works	SW	KCC, TMBC	Short Term	Up to 50k
			Complete a study to investigate the condition of gullies and drains and connections to Southern Water surface water sewers.	Improved conveyance through gullies	Include study within future schedule of works	KCC, SW	TMBC	Medium term	Up to 50k
			Consider methods to improve surface water management on Baltic Road and Quarry Hill Road		Include study within future schedule of works	KCC	TMBC	Long Term	Up to 50k

**** Priority: Quick win = within 12 months. Short Term = up to 2 years. Medium Term = up to 5 years. Long Term = open ended/indefinite. ** Indicative Cost: Up to 50k, 50-150k, 150-250k or 250+k***

4.4 Review Timeframe and Responsibilities

The project partners have reviewed and commented upon the actions during the Action Plan workshop.

High priority actions identified in the 'Action Plan' are likely to be those addressed first. However, this report can only consider relative priorities *within* Tonbridge and Malling. Some partner organisations, Southern Water, Thames Water, Upper Medway IDB, Environment Agency and Kent County Council have flood risk management responsibilities beyond the geographic scope of this study, and therefore the priority of actions within Tonbridge and Malling will have to be assessed against actions in other areas. Kent County Council is currently embarking upon a number of more strategic-scale SWMPs in a number of other settlements across the county.

Actions leading to capital works will initially require a detailed local study that provides robust estimates of costs and justification (i.e. tangible benefits) of the scheme. If a study demonstrates that a scheme is beneficial funding will need to be obtained before it can be delivered. Applications for funding and the implementation of solutions on the ground, all of the detailed study and availability of funding have the potential to change the findings and recommendations of this report.

It is recommended that an annual review of the High and Medium Priority actions is undertaken. This will allow for forward financial planning in line with external partners and internal budget allocations. Low priority actions should be reviewed on a three-year cycle.

4.5 Sources of funding

Funding for local flood risk management may come from a wide range of sources. In Tonbridge and Malling these may include:

- Defra (Flood Defence Grant in Aid)
- Industrial estate owners and businesses
- Kent County Council (highways)
- Tonbridge and Malling Borough Council
- IDBs
- Local communities
- Network Rail
- New developments (directly through the developer or through CIL)
- Southern Water
- Local Levy from the southern region Regional Flood & Coastal Committees (RFCC)

It is likely that not all schemes in Tonbridge and Malling will not have sufficiently strong cost-benefit ratios to attract 100% funding from Defra Flood Defence Grant in Aid (FDGiA), and would therefore require a portfolio of funding to be developed from various sources, including funding sources available for delivering other objectives such as improvements to highways, public open spaces and bio-diversity.

4.6 Ongoing Monitoring

The partnership arrangements established as part of the SWMP process should continue beyond the completion of the SWMP in order to discuss the implementation of the proposed actions, review opportunities for operational efficiency and to review any legislative changes.

The SWMP Action Plan should be reviewed and updated once every six years as a minimum, but there may be circumstances which might trigger a review and/or an update of the action plan in the interim, for example:

- Occurrence of a surface water flood event;
- Additional data or modelling becoming available, which may alter the understanding of risk within the study area;

- Outcome of investment decisions by partners is different to the preferred option, which may require a revision to the action plan, and;
- Additional (major) development or other changes in the catchment which may affect the surface water flood risk.

The action plan should act as a live document that is updated and amended on a regular basis, and as a minimum this should be as agreed in the Local Flood Risk Management Strategy for Kent, although individual partners may wish to review their actions more regularly.

4.7 Way Forward

Kent County Council has prepared a Local Flood Risk Management Strategy (the Local Strategy), which sets objectives and priorities for the management of local flood risks across the county. The Local Strategy includes an action plan of investigations and works to achieve the objectives and indicates which risk management authority should lead this work. The action plan is updated annually with progress on previous actions and new actions that have been identified. The action plan uses information from studies like this and other sources from across the county to prioritise where further works are needed to help achieve the objectives, this is balanced with the available sources of funding and resources to deliver these actions. The Local Strategy can be found here:

www.kent.gov.uk/local_flood_strategy

This SWMP and any new information about local flooding in Tonbridge and Malling that comes to light will be used as part of the evidence base when setting the Local Strategy action plan annually. Any actions identified to be delivered from this SWMP will be overseen by the SWMP Partnership.

Offices at

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Edinburgh
Haywards Heath
Limerick
Newcastle upon Tyne
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Saltaire
Skipton
Tadcaster
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