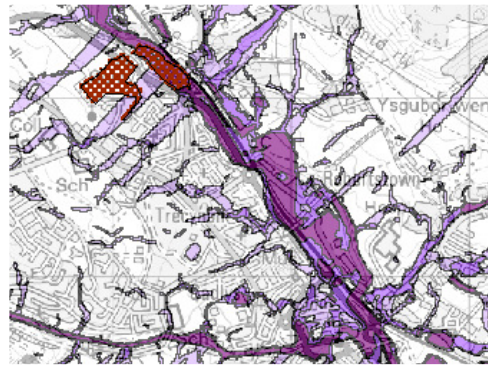


Rhondda Cynon Taf LDP Surface Water Analysis

Final
April 2010



Prepared for

Revision Schedule

D127086 - Surface Water Analysis April 2010

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	March 2010	Draft – for comment	Patrick Goodey Assistant Hydrologist	Jon Robinson Associate Director	Jon Robinson Associate Director
01	April 2010	Final – incorporating client comments	Patrick Goodey Assistant Hydrologist	Jon Robinson Associate Director	Jon Robinson Associate Director

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1 Introduction

1.1 Project Requirement

As part of the emerging Rhondda Cynon Taf LDP and the analysis of all potential development sites, it is essential to investigate the potential risks posed to the sites from surface water flooding. The principle driver behind the surface water analysis is the Areas Susceptible to Surface Water Flooding (ASTSWF) maps.

The Environment Agency has produced a guidance document for Local Planning Authorities for use in planning. This guidance document states that *'..it is anticipated that Inspectors will wish each LPA to confirm that it has taken the information in the maps into account and be able to inform him/her of the implications for all sites allocated in the LDP'* (Environment Agency, 2009).

1.2 Background to the ASTSWF Maps

The ASTSWF maps show areas that are potentially susceptible to flooding from surface water sources. They were developed for the Environment Agency at a national level to provide surface water flooding information to Local Resilience Forum (LRF) partners and the Welsh Assembly Government (WAG). The map data is a deliverable from the Pitt Review of the summer 2007 floods. The flood risks posed are defined in three bandings, 'less', 'intermediate' and 'more' susceptible. Given the national scale of the maps, their use at a local scale should be treated with caution.

The Environment Agency guidance document explains the role of the ASTSWF maps in the LDP process. The salient recommendations of the guidance document are:

- Maps should indicate where more detailed studies may be appropriate;
- They are not appropriate to act as the sole evidence for any specific planning decision without further evidence;
- Other data such as that collated as part of the SFCA or data from the local drainage engineers should be used to indicate where further assessment may be necessary.

Once a site or area has been identified as being constrained by surface water flooding on account of location within an ASTSWF zone, it will be cross referenced with available data sets such as those collected during the completion of the Strategic Flood Consequence Assessment (SFCA), completed in 2008, prior to the release of the ASTSWF maps and guidance. Where sites are identified as being at risk from surface water flooding, further assessment would be required as part of the site assessment, for example via a Flood Consequence Assessment (FCA).

1.3 Aim and Objectives

The aim of this report is to provide Rhondda Cynon Taf CBC with an outline analysis of draft LDP land allocations, including Strategic Sites that are potentially constrained by surface water flood risk. This overall aim will be met by the following key objectives:

- Undertake a 'screening assessment' to identify sites at potential risk of surface water flooding;
- Cross reference the screened sites with existing flooding records or data;
- Indicate where further analysis work would be required in order to progress development of potentially affected sites.

2 Methodology

2.1 Site Screening

In order to undertake the site analysis, the ASTSWF maps were provided by Rhondda Cynon Taf CBC (in consultation with the Environment Agency) as GIS layers. Overview maps showing ASTSWF zones for the entire LDP Plan Area are provided in Appendix A.

The list of proposed sites to be assessed in the LDP consisted of the LDP land allocations, which included the Strategic Sites. Initial review indicated that some of these sites are only marginally located within a 'Less' or 'Intermediate' ASTSWF zone. Therefore potential development within these sites could easily be sequentially located outside of such areas, i.e. with areas outside of an ASTSWF zone primarily chosen as development locations, where possible. As the 'More' susceptible zones indicate that surface water flooding could be a potentially significant issue, a site with any amount of its area within a 'More' susceptible zone should be considered for further scrutiny.

As a result of the above, a site screening process has been undertaken, using the following criteria to identify sites for further assessment, namely:

- A site with any amount of its area falling within a 'more' susceptible ASTSWF zone would be screened in;
- A site with at least 10% of its area within a 'less' or 'more' susceptible zone would be screened in;
- A site with none of its area with a 'more' are or less than 10% of its area within a 'less' or 'more' zone would be screened out.

This methodology has been discussed and agreed, in principle, with Christian Servini of the Environment Agency on the 20th March 2010.

2.2 Comparison with Existing Data

A key requirement of the surface water analysis is cross referencing with existing data to identify the sites that have been subject to historical surface water flooding incidents, or are known to be within areas that regularly experience surface water flooding. The key datasets or information sources interrogated as part of this assessment are:

- Data collected from the SFCA, notably the Priority Culvert Dataset;
- Historical records provided by the local Drainage Engineer (an interrogation of the Rhondda Cynon Taf CBC Customer Care database);
- Anecdotal records or miscellaneous information provided by local Drainage Engineers;
- Maps provided by the WAG to the Local Resilience Forum showing areas affected by surface water flooding.

Page 10 of the Environment Agency Guidance that accompanies the ASTSWF maps states as follows:

'The Welsh Assembly Government (WAG) have produced maps of known locations of historic surface water flooding, mostly from Local Authority and Water Company records. This data is being shared with Local Resilience Fora partners, including LAs and is expected to be available during the autumn of 2009.' (Environment Agency, 2009).

The Council has established that the Flood and Coastal Risk Management part of the WAG Climate Change and Water Division supplied the maps on disc in October 2009. However, despite the efforts of the Council's Head of Emergency Planning and GIS Senior Officer, the discs have not been located in time for the finalisation of this report before the LDP Examination Hearings."

During the completion of the SFCA in 2008, Dŵr Cymru Welsh Water was consulted with a request for data pertaining to historical flooding records. However, no data was received during the completion of the project. Therefore, the principal data obtained from the SFCA was the Priority Culvert Dataset, indicating the location of culverts known to have capacity issues. It is unclear, on a strategic scale, whether the culverts serve fluvial watercourses or surface water drainage systems. However, if the site analysis indicates proximity to priority culverts, further investigation would be recommended to investigate the nature of the culvert.

2.3 Stakeholder Liaison

In order to collate relevant data, as identified in Section 2.2 above, the following stakeholders were identified and contacted. A summary of liaison is provided in Table 1 below.

Table 1 Stakeholder liaison undertaken during the data collection phase

Stakeholder	Information Requested	Date Received	Notes
Rhondda Cynon Taf Drainage Engineers	Historical flooding incidents, recorded or otherwise	17 th March 2010	
WAG	Maps showing areas affected by historical events	N/A	Referred the request to local Emergency Planners
Rhondda Cynon Taf Emergency Planners	Maps showing areas affected by historical events	Not received at time of writing	See paragraph above
SFCA	Historical records of surface water flooding, Priority Culverts dataset and any other anecdotal evidence	Ongoing	Only applies to the Strategic Development Sites, not Candidate Development Sites

3 Results

The full results from the site analysis are provided in

Table 2 and Table 3, below. In general, the results indicate that at many of the sites there is a significant interaction between surface water and small fluvial watercourses that traverse the sites (for example the potential candidate sites at Ferndale Industrial Site and Highfield Industrial Estate in Maerdy). Some of the sites have been subject to previous flood incidents such as those adjacent to the A4059 Penywaun – Trecynon road and A473 road.

Whilst many of the sites are located within an ASTSWF zone, it is recommended that any development is sequentially located outside of these zones, wherever possible to minimise further analysis or investigation work. As mentioned above, given the interaction between surface water and fluvial systems, such sequential location is likely to occur as a natural progression of a site Masterplan.

A review of

Table 2 indicates that the most significantly constrained of the potential candidate sites are Highfield Industrial Estate in Maerdy, Land at former Mayhew Chicken Factory in Trecynon, Trane Farm in Tonyrefail and Land south of Llantrisant Business Park in Llantrisant.

Table 3 indicates that the most significantly constrained Strategic Development Sites are Robertstown and the Former Phurnacite Plant in Abercwmboi. Robertstown is currently subject of a detailed FCA, which would investigate the flood risks posed to the site in greater detail than this assessment. This FCA has not, at the time of writing, been sent to Rhondda Cynon Taf CBC. The former Phurnacite Plant in Abercwmboi is significantly constrained by fluvial flood risk so would be subject to more detailed FCA analysis. However, the majority of the 'More' susceptible surface water zones at this site are associated with either the fluvial watercourses (River Cynon) or the existing pond located on the site.

Table 2 Site analysis – Draft LDP Land Allocations Identified by Screening for Further Assessment

Site ID	LDP Reference and proposed use	Site Name	Settlement	Total Area	ASTSWF Less %	ASTSWF Inter %	ASTSWF More %	ASTSWF Total %	No. Priority Culverts in Settlement	Drainage Engineer Comments	Additional Notes and Further Action Required
417	NSA 9.1 housing	Land South of Rhigos Road	Hirwaun	0.6	18	0	0	18	0	No recorded flooding problems in vicinity of the site but watercourses present along north eastern and south western site boundaries.	None for surface water – investigate small watercourses as fluvial flood risks
288	NSA 9.2 housing	Land east of Trenant	Penywaun	3.4	11	2	0	13	0	Recorded flooding of A4059 (Penywaun – Trecynon, within 'Intermediate' zone along southern border of site) resulting in temporary closure of highway	Site not significantly constrained, therefore sequentially locate development out of southern 'Intermediate' zone, if possible. Further investigate nature of previous flooding
237	NSA 9.5 housing	Tegfan Farm	Trecynon	4.7	10	0	0	10	0	Recorded flooding of A4059 (Penywaun – Trecynon, down slope of site) resulting in temporary closure of highway	Investigate nature of previous flooding and presence of a bank between the A4059 and site as an informal defence. To be undertaken at planning application stage.
176	NSA 9.8 housing	Dyffryn Row	Cwmbach	0.8	5	3	5	13	1, nr Abernant upstream of site	Recorded flooding of A4059 Canal Road, 400m to the north of the site	Potentially investigate nature of flooding to north of site at planning application stage
412	NSA 9.11 - already being built	Gwernifor Grounds	Mountain Ash	0.5	15	0	0	15	6	On going discussions with developer/agent to agree flood risk strategy for site. No final agreement at present.	None – site already under development and negotiations
46	NSA 9.18 housing - NB plateau	Site off Cemetery Road	Treorchy	2.7	17	12	0	29	31, one nr Cemetery Rd	Site traversed by Nant Orci culvert, flood risk from areas upstream, subject of Project Appraisal Report (Cemetery Road, Treorchy)	None – site located on a plateau with development sequentially located on the plateau, outside of the flood risk areas.
6	NSA 14.1 employment	Ferndale Industrial Estate	Maerdy	1.1	14	0	0	14	17, two nr Richard St, east of the site	Possible culverted watercourse running through site, open channel watercourse on site. This culvert potentially identified as the 'Less' zone on site	Investigate nature of culvert/ watercourse on site at the planning application stage.
9	NSA 14.1 employment	Highfield Industrial Estate	Maerdy	1.1	29	0	0	29	0	Possible culverted watercourse running through site. This culvert potentially identified as the 'Less' zone on site	Investigate nature of culvert/ watercourse on site at the planning application stage.
359	NSA 14.3 employment	Land at former Mayhew Chicken Factory	Trecynon	2.9	6	14	80	100	3, none nr the site	Off-site surface water sewer from Potters Field traverses site, recorded flooding of A4059 (Penywaun – Trecynon) resulting in temporary closure of highway.	Investigate nature of previous flooding. Site significantly constrained by fluvial and surface water flood risk so subject to detailed FCA.

Site ID	LDP Reference and proposed use	Site Name	Settlement	Total Area	ASTSWF Less %	ASTSWF Inter %	ASTSWF More %	ASTSWF Total %	No. Priority Culverts in Settlement	Drainage Engineer Comments	Additional Notes and Further Action Required
424	SSA 10.4 housing	Bryngolau	Tonyrefail	1.7	8	12	11	31	3, one nr the Police Station on Mill St., d/stream of site	Recorded flooding of Gilfach Road, 250m south of the site	Investigate nature of previous flooding and ASTSWF zone, which is confined to the centre of the site.
496	SSA 10.6 housing	Land East of Mill Street	Tonyrefail	6.4	7	11	1	19	0	No flooding recorded but query capacity of existing culvert from Mill Street – River Ely, 100m west of the site	Investigate River Ely culvert at planning application stage
177	SSA 14.1 employment	Land south of Llantrisant Business Park	Llantrisant	7.4	6	15	10	31	1	Recorded flooding of A4119 (west of site, on opposite bank of the Nant Muchudd)	As flooding occurred on opposite bank to the site, investigate previous flooding at planning application stage

Table 3 - Site analysis – Strategic Development Sites. Further details regarding these sites can be found in the SFCA (<http://www.rhondda-cynon-taff.gov.uk/stellent/groups/Public/documents/RelatedDocuments/027513.pdf>)

Site ID	LDP Reference	Site Name	Settlement	Total Area	ASTSWF Less %	ASTSWF Inter %	ASTSWF More %	ASTSWF Total %	No. Priority Culverts in Settlement	Drainage Engineer Comments	Additional Notes and Further Action Required
1	SSA 8	Mwyndy / Talbot Green Area	Llantrisant	185.7	5	11	7	23	None in Llantrisant	Situated across flood plain of River Clun, recorded flooding to A473 (immediately north of site).	Majority of ASTSWF zones associated with fluvial watercourses, therefore, sequentially locate development away from such areas, where possible. Investigate previous flooding of road.
2	SSA 7	Cwm Colliery and Coking Works	Beddau	92.4	12	7	4	23	None in Beddau	Drainage improvements proposed under private/public reclamation scheme.	Majority of 'More' susceptible zones associated with fluvial watercourses, therefore, sequentially locate development away from such areas, where possible. Investigate potential drainage improvements.
3	SSA 9	Former OCC Site, Llanilid, Llanharan		400.3	5	8	4	17	None in Llanharan	Recorded flooding of highway at Llanharry Road (immediately east of site) and A473 (dissects the northern portion of site).	Some 'More' susceptible zones potentially associated with marshy or lower topographical areas on site (e.g. in northern extent of the site). Investigate previous flooding.
4	NSA 5	Former Fernhill Colliery Site	Treherbert	45.7	8	4	5	17	23 in Treherbert. SFCA recognised three culverts near the site	Previous discussions held with landowners with regard to resolution of flood risk issues on site. No satisfactory outcome achieved.	Majority of 'More' susceptible zones associated with watercourses and associated flood zones, therefore sequentially locate development away from these, where possible. Investigate previous work/ discussions and the on-site culverts.
5	NSA 4	Former Maerdy Colliery Site	Maerdy	68.6	1	2	1	4	17 in Maerdy, none apparently near the site.	Drainage improvements proposed under Maerdy Stage 2 reclamation scheme.	None - Site not significantly constrained.
6	NSA 8	Land South of Hirwaun /Penywaun	Hirwaun	340.8	16	5	1	22	None in Hirwaun	Recorded flooding of A4059 (Penywaun – Trecynon) resulting in temporary closure of highway.	Investigate previous flooding. Site crossed by 'veins' of 'Less' and 'Intermediate' zones that generally follow the line of small drain, ditches or watercourses, which should be investigated as part of a detailed FCA
7	NSA 7	Robertstown / Abernant	Robertstown	33.4	8	14	27	49	Two in Aberdare, both believed to be on the opposite side of the valley to the site	Partial flood risk from Abernant Road and surrounding area, subject of Project Appraisal Reports (Forge Trip, Abernant and Aberdare Canal). Recorded flooding of Abernant Road in vicinity of Aberdare railway station.	Lower (western) part of site significantly constrained by flooding (fluvial and surface water) and is currently subject to detailed FCA. Investigate historical flooding and previous works.
8	NSA 6	Former Phurnacite Plant	Abercwmboi	58.5	9	16	35	60	None in Abercwmboi. SFCA recognised one culvert in some disrepair but with no impact on flood risk	Situated in flood plain of River Cynon, private reclamation scheme for remediation of contaminated land.	Majority of ASTSWF zones associated with fluvial watercourses and on-site pond. Detailed FCA would be required to investigate the interaction between surface water and fluvial flooding

4 Summary

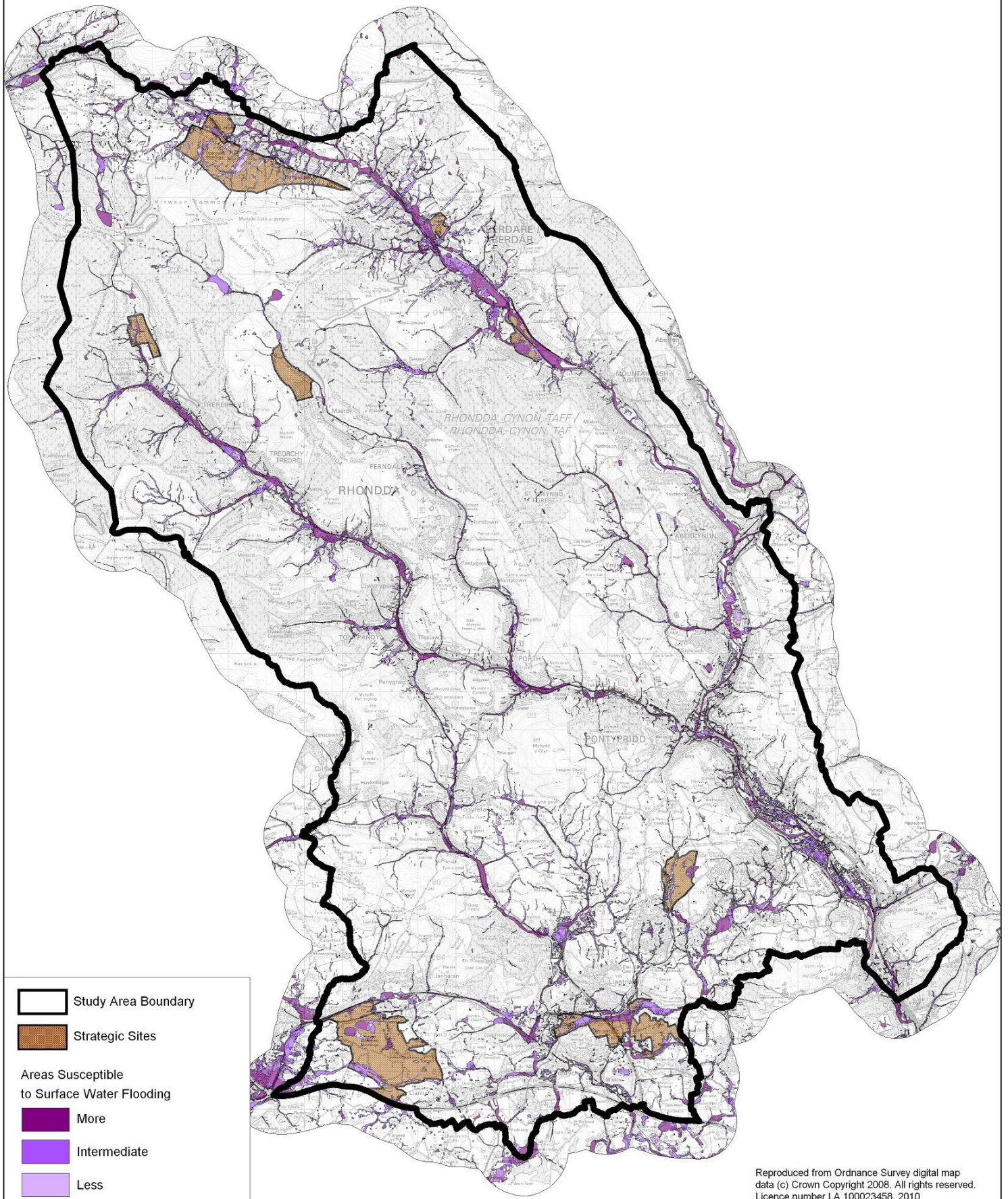
- The surface water analysis is required to support the emerging Rhondda Cynon Taf CBC LDP;
- The methodology chosen was derived from the Environment Agency guidance document 'Areas Susceptible to Surface Water Flooding – Guidance for Local Planning Authorities in Wales';
- In order to refine the analysis, a site screening exercise was undertaken, sites were screened into the assessment if any of the site area was within a 'More' susceptible zone or if had at least 10% of their area within a 'Less' or 'Intermediate' susceptible zones;
- Screened in sites were cross referenced with data from the SFCA (notably the Priority Culvert Dataset) and comments provided by Rhondda Cynon Taf CBC Drainage Engineers;
- In general, surface water susceptibility zones correlated with fluvial systems such as Main Rivers or small watercourses;
- Recommendations for further analysis generally include sequentially locating development away from susceptible zones, reviewing or investigating previous flood events or investigating the nature of on-site watercourses or culverts.

5 References

Environment Agency, 2009. Areas Susceptible to Surface Water Flooding. Guidance for Local Planning Authorities in Wales for land use planning. Version 1, October 2009

Scott Wilson, 2008. Strategic Flood Consequence Assessment

Appendix A – Figures



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Study Area Boundary
 Strategic Sites
 Areas Susceptible to Surface Water Flooding
 More
 Intermediate
 Less

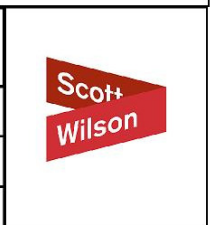
Project:
Rhondda Cynon Taf LDP - Surface Water Analysis

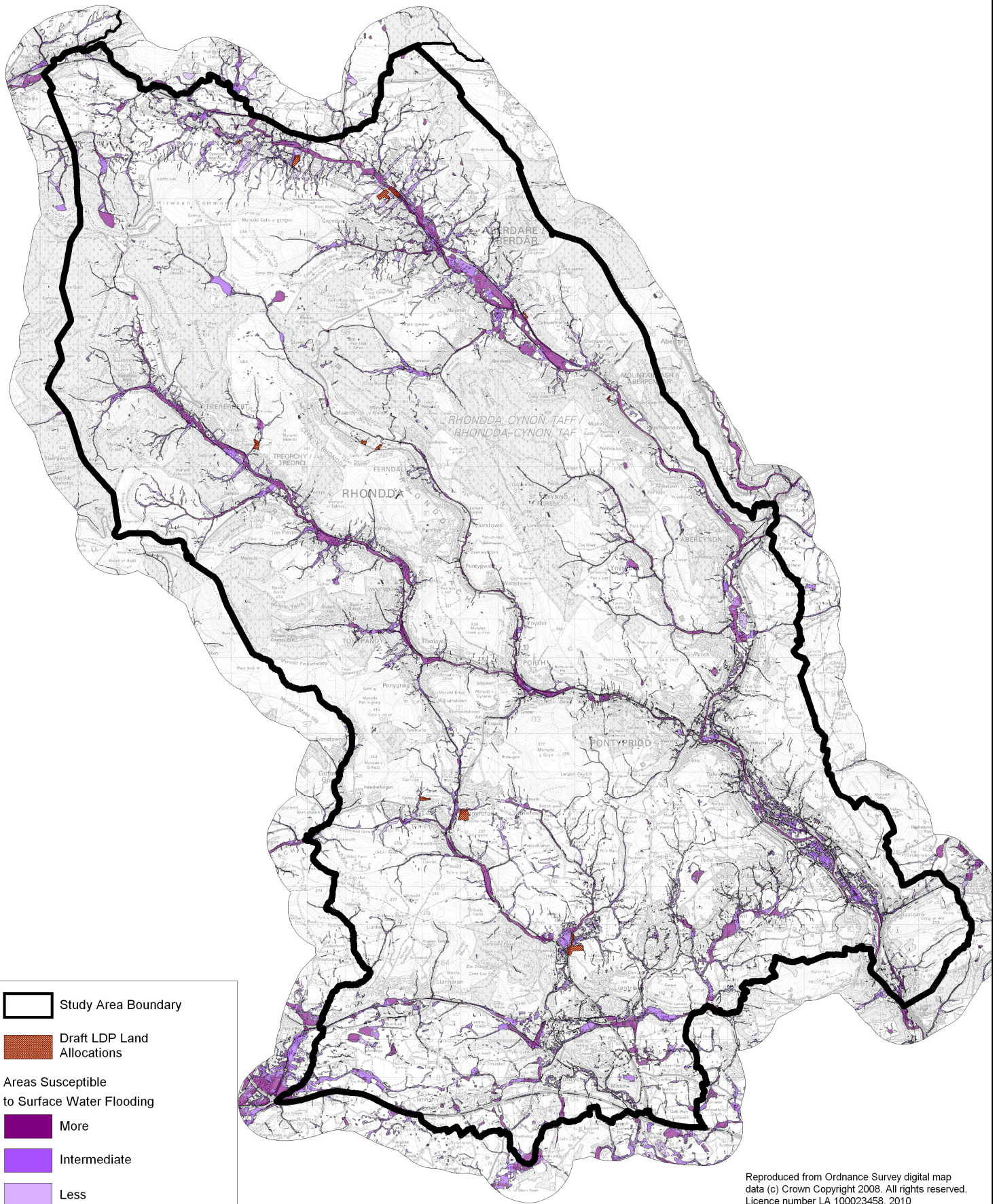
Appendix A1

Scale at A3: 1:95,000

Title:
Strategic Sites - Areas Susceptible to Surface Water Flooding

Drw	MJC	App	PG	Rev
Date	23/03/10	Chk	PG	Date





-  Study Area Boundary
-  Draft LDP Land Allocations
- Areas Susceptible to Surface Water Flooding
 -  More
 -  Intermediate
 -  Less

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Project:
Rhondda Cynon Taf LDP - Surface Water Analysis

Appendix A2

Scale at A3: 1:110,000

Title:
Draft LDP Land Allocations Identified by Screening for Further Assessment

Drw	MJC	App	PG	Rev
Date	07/04/10	Chk	PG	Date

