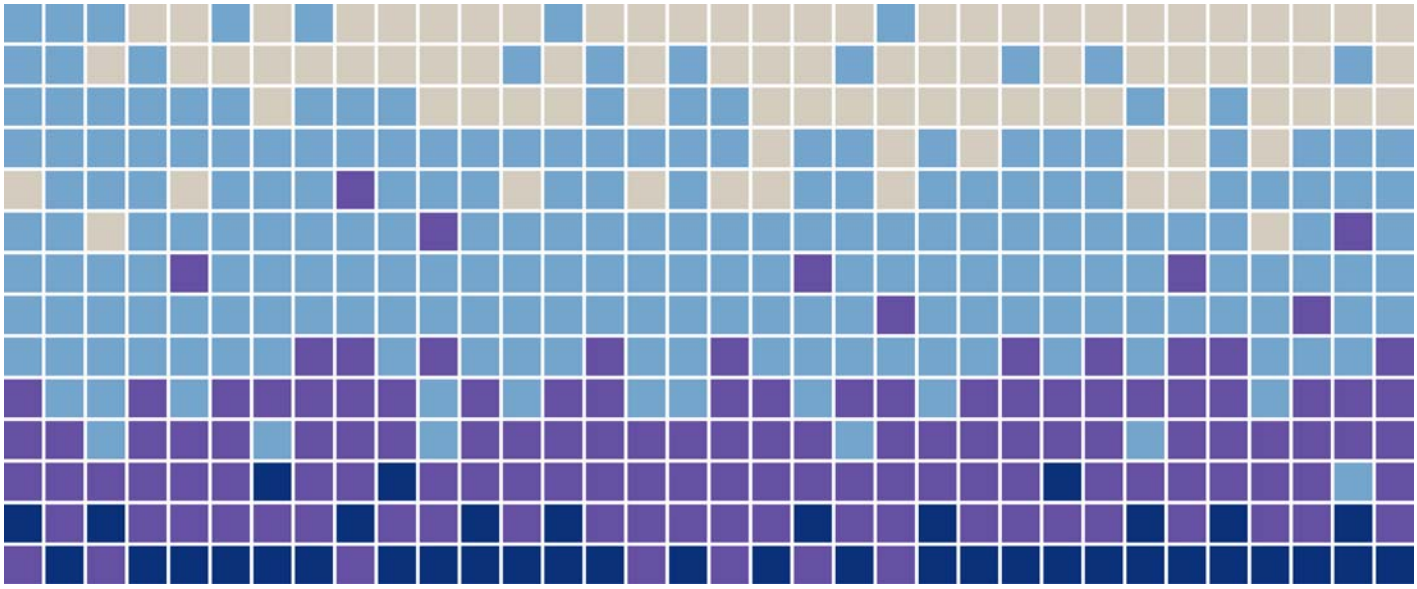

Leamington Spa Station Area Development Brief

Drainage Input

Warwick District Council

June 2008

WSP

QM

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Final			
Date	10 June 2008			
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Project number	11050736			
File reference	Development Brief - Drainage Input			

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Contents

1 Introduction

1.1 INTRODUCTION

1.1.1 WSP Development and Transportation (WSPD&T) have been appointed by Warwick District Council (WDC) alongside a consultant team including GVA Grimleys and TWS Architects in order to provide inputs into a development brief document for the regeneration of the Leamington Spa station area.

1.1.2 The site is brownfield land currently made up of 14 parcels of land which have various non-residential uses.

1.1.3 This drainage report has been prepared to advise on the existing and proposed drainage of the site.

1.2 SITE OBSERVATIONS

1.2.1 The EA have advised that the site is not located within the flood plain and they have no records of flooding problems associated with the site. See Environment Agency Drawing CSC 14335 (Figure 1) – The majority of the site is in Flood Zone 1, the Flood Zone 2 affects a very small area in the north west of the site.

1.2.2 The site generally falls in a northerly direction towards the River Leam.

1.2.3 The Warwick District Council Drainage Department (WDC) have advised that a highway drain runs in Old Warwick Road draining highway water only and is therefore not shown on STW plans.

1.2.4 At both the East and West end of the site where Lower Avenue and Prince's Drive run beneath the railway line there is a history of local flooding at the low points. However WDC have informed us that remedial works on the sewer in Lower Avenue have solved the flooding problem. They also advised that due to silt running off the railway embankment, the sewer in Prince's Drive was on a programme to be flushed out on a regular basis which solved the problem here, but this has stopped now so local flooding may re-occur. There was evidence on site of partially silted up gullies under the bridge.

1.2.5 Warwick DC have advised that new connections into Prince's Drive may be difficult to construct due to the large number of services already in the highway.

1.2.6 Warwick DC also stated that Ford had permission to extract water from the Grand Union Canal but do not have any discharge licences.

1.2.7 Examination of the STW records suggest that a large proportion of site drainage runs to the large combined sewer running east to west to the north of the site, **however on-site drainage records or a survey will be required to confirm this**.

1.2.8 There are public foul and storm water sewers running through the Ford Foundry site located at the rear of Homebase. These may be useful for future connections, subject to Severn Trent Water approval.

1.2.9 Generally we would expect proposed development drainage to mirror that of the existing site with SUDS and attenuation features incorporated to comply with PPS 25. This may require the use of swales, porous paving, balancing ponds or soakaways etc. the effectiveness of such features will be dependant upon the ground conditions and/or individual site constraints.

2 Consultations

STORM WATER

2.1 ENVIRONMENT AGENCY REQUIREMENTS

2.1.1 The Environment Agency require for all sites that “Sustainable Drainage Systems (SuDS), such as soakaways or other infiltration systems, must be considered as the preferred means of surface water disposal for the site. Thorough ground investigations and permeability tests will need to be carried out to determine whether the ground conditions are suitable and demonstrate that the ground water will not be polluted.”

2.1.2 The development will be on Brownfield land and as such the Environment Agency will require that surface water discharge is limited to “5 l/s/ha (Greenfield equivalent)”. However “If this is proven to be unachievable it should be demonstrated that the surface water discharge rate has been reduced as far as is possible as compared to the existing situation.”

2.1.3 The developer will be expected to “contain the 1 in 100 year +30% (for climate change for a residential development) within any proposed drainage system on site. The surface water sewers will need to be designed at the very minimum in accordance with Sewers for Adoption (6th Edition), 30 year standard or similar. Details must be provided to confirm that surface water will not leave the proposed site and must be stored in the 100 year +30% event. If the system surcharges the Environment Agency may require additional space to be made for water, the location of any surcharging should be identified as should any relevant overland flood flow routes. Any excess surface water should be routed away from any proposed or existing properties. Drainage calculations must be included to demonstrate this (e.g. Micro Drainage or similar package calculations), including the necessary attenuation volume, pipeline schedules, network information and results summaries.”

2.1.4 The Environment Agency states “the adoption and future maintenance of the proposed surface water scheme should also be addressed”, and “The use of sustainable drainage systems should be assessed using the following hierarchy of techniques and relevant reasons be given as to why they cannot be incorporated, the Environment Agency will not normally accept lack of space or costs to be relevant reasons”:

- “Use of green roofs, rainwater harvesting and grey-water re-use within new developments, details of which can be found in CIRIA 664 and the Interim Code of Practice for Sustainable Drainage Systems.”
- “Surface water drainage to be attenuated through the use of infiltration techniques such as soakaways unless ground conditions are proven (through undertaking appropriate tests) to be inappropriate due to insufficient or gross contamination is present.”
- “Surface water drainage is to be attenuated through the use of above ground sustainable drainage techniques such as swales, attenuation ponds (both formal and informal as par of the general landscaping design), green detention areas and / or areas of permeable paving (especially within parking and pedestrian areas). All these methods can be designed into site layouts without the need for permeable ground conditions and would still meet four of the six core principles as set out in the Interim Code of Practice and CIRIA609 (p.29)”

- “If the above cannot contain the full attenuation volumes required, then consideration will be given to their use in a combined system with the proposed adopted sewer system as designed for sewers for adoption.”
- “Only if none of the above methods are possible would the Environment Agency reluctantly consider the use of oversize tanks on any site as this is not considered best practice or provide a suitable level of treatment as required through the use of SUDS techniques.”

2.2 BRITISH WATERWAYS

2.2.1 From early discussions with Warwick District Council it was thought that Ford had permissions to extract water from the grand union canal, however British Waterways have informed us that this has been blocked off and therefore they have no more involvement with the site. In addition to this British Waterways have stated if a site “involves land that is above the canal level or separated by a significant area of low lying land, then flooding from the canal is practically impossible”, and as the Station Area Site is separated from the canal by Old Warwick Road which is at a higher level than the canal, the site will have a very low likelihood of flooding caused by the canal.

2.3 NETWORK RAIL

2.3.1 Network Rail have been unable to provide us with any information regarding their drainage apparatus (if any) within the site.

FOUL WATER

2.4 EXISTING INFORMATION

2.4.1 The site slopes down in a northerly direction where an existing 950mm diameter combined sewer is situated. This would be the most appropriate option to take the foul drainage from the site, although the capacity in the system will need to be confirmed once proposals for the site have been established. There is a foul sewer located in Prince’s Drive, however connections into this sewer may be difficult due to the high number of services already located within the highway.

2.4.2 Surveys to establish the presence and condition of existing drainage connections below the railway will be needed.

3 Summary

3.1.1 Overall there is a good gradient on the site for the drainage systems to require only gravity sewers. Storm water attenuation will be required before connections to the existing drainage network can be made; confirmation will be required as to the capacity in the local drainage network to take in the foul water from the proposed development.

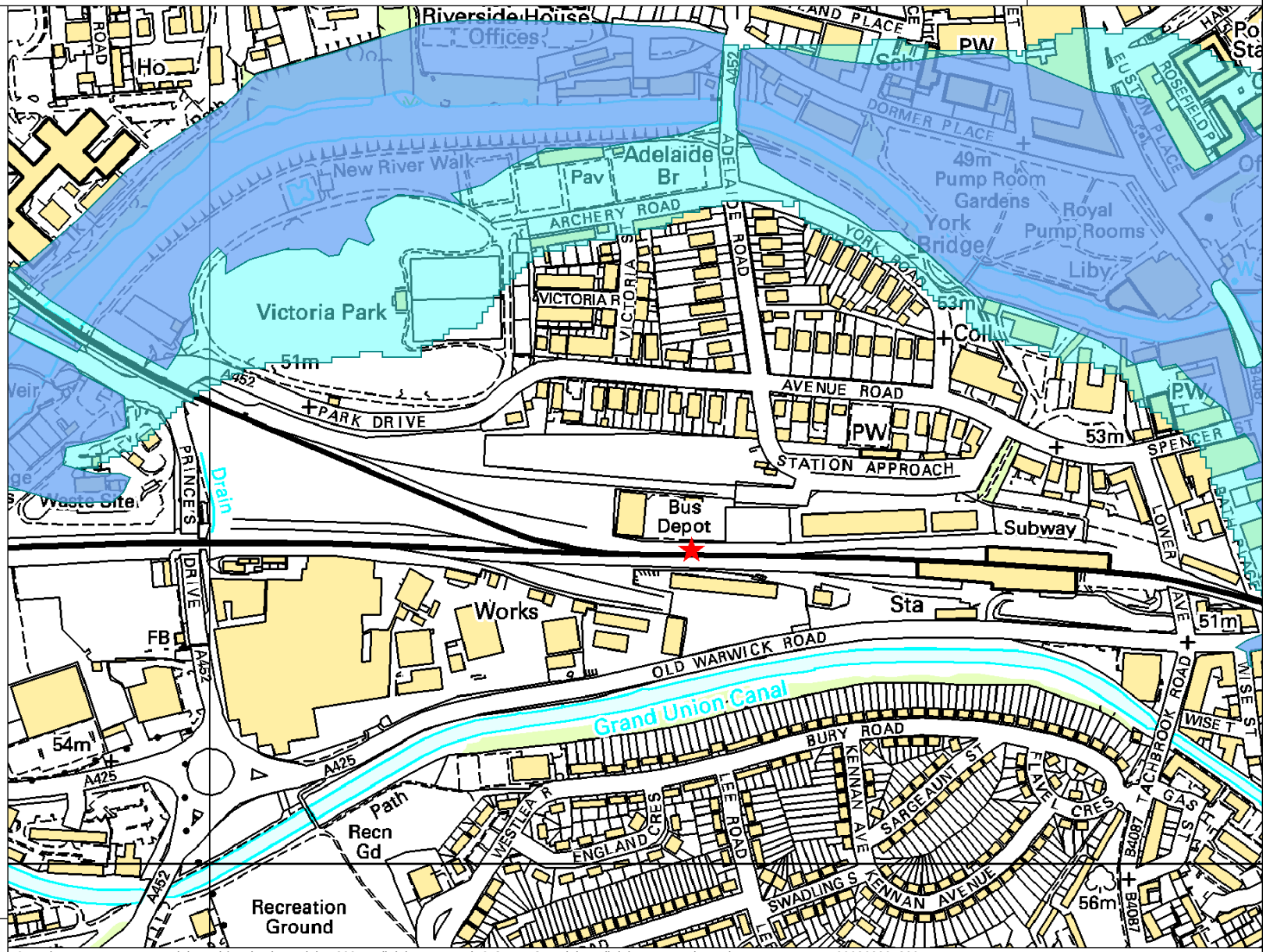
Appendices, Figures & Tables

CSC 14335

Environment Agency

Legend

- Flood Map - Defences
- Areas Benefiting from Flood Defences
- Flood Map - Flood Storage Areas
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2



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