SAVE PEEL HALL

TOO LATE WHEN IT'S GONE

Proof of Evidence

Vol 5 – Hydrology, Drainage, & Flood Risk Assessment

Produced by David Sawyer
Rule 6 Party
Peel Hall - APP/ M0655/W/17/3178530

Contents

*Note: the above appendices are enclosed in a separate core document in pdf format.

1.0 Personal Details

My name is David Sawyer and I am a retired civil engineer.

I was formerly employed at Warrington and Runcorn Development Corporation from 1974-1987.

I have also worked for a number of major consulting engineers including:

Rendel Palmer and Tritton
Atkins
Montgomery Watson
Bullens

Prior to retirement I was employed as a Project Coordinator at United Utilities

I live at 4 Brathay Close Warrington WA2 9UY.

2.0 Introduction

2.1 Since August 2016 when the current planning application was first submitted there has been a series of major flood events throughout the UK.

2.2 Warrington has not been immune to these events. In the past few years alone a substantial number of locations* around the town have suffered from serious flooding, including:

March 2020 - Riverside Retail Park Warrington

February 2020 - Hillock Lane Woolston

February 2020 - Mee Brow Culceth

November 2019 - Densham Avenue Longford

November 2019 - Hawley's Lane Dallam

October 2019 - Densham Avenue Longford

October 2019 - Denham Avenue Gt Sankey

September 2019 - Longford Skoda Garage

August 2019 - Reddish Lane Lymm

July 2019 - Hawley's Lane Dallam

April 2019 - Hilden Road Warrington

December 2017 - Warrington Lane Lymm

September 2012 - Densham Avenue Longford

September 2012 - Hawley's Lane Dallam

September 2012 - Meadowside Primary School Warrington

*Source: Warrington Guardian and Warrington Worldwide

2.3 In the light of events both locally and nationally there is now great concern amongst residents living in the vicinity of the Peel Hall site that the proposed development will lead to flooding on local roads and housing areas going forward. For example the appellant's FRA confirms that he proposes to use existing watercourses and ditches on the site to dispose of surface water - and yet it is a well known fact locally that many of these watercourses and ditches connect to areas downstream that are already prone to flooding, despite flood alleviation works having been carried out in the recent past.

2.4 It is also clear from information we have recently obtained from the Cheshire Record Office that Warrington New Town Development Corporation (WNTDC) actually rejected the idea of using the largest of these watercourses, namely the Spa Brook, for the disposal of surface water from Peel Hall Development. The Development Corporation concluded as long ago as 1977 that the 'Spa Brook has no spare capacity for any increase in flow.'

2.5 Given these and other concerns we have now completed a full review of the appellant's FRA. Areas we have covered include a detailed examination of the contents of the current FRA and a full assessment of the FRA when measured against current and future legislation. We have also highlighted important information which we believe should have been included in the FRA as part of the overall assessment of the site. Finally we have carried out a full assessment of the information we recently received from the Cheshire Record Office in respect of WNTDC's proposals for the Peel Hall Site.

3.0 Site History

3.1 The Peel Hall site is one of the last remaining areas of open land in the north of Warrington.

3.2 The site is essentially land-locked. It is bounded to the north by the M62 motorway and to the south and east by existing housing estates. Winwick Road is located at the western end of the site.

3.3 Warrington was designated as a New Town in 1968 and the Peel Hall site formed part of the original New Town Master Plan. The site was previously used as farmland.

3.4 Warrington New Town, later to become Warrington and Runcorn Development Corporation was planned as a series of local centres designed to sit around the existing town centre.

3.5 New Town development commenced in the early 1970s across the north of the town starting with the Birchwood and Oakwood sites.

3.6 By the end of the decade much of the New Town development east of the A49 Winwick Road had been completed, with the main exception being the Peel Hall site.

3.7 In a speech to Parliament in June 2000 the former MP for Warrington North Helen Jones referred to the Peel Hall site as follows:

'The strength of feeling of the residents in the area has already been tested on many occasions when there have been development proposals. Originally, when the plans for the new town were being unveiled, people in what was then the small village of Orford Green were assured that the area between the M62 down into Orford would be preserved as a linear park. Eventually, the development corporation abandoned plans to build on the site generally. It considered it unsuitable because of problems associated with mining subsidence.'

3.8 Helen Jones was referring to Parkside Colliery which opened in 1957 and finally closed in 1993. The site of the former colliery is located approximately 2.5km north of the Peel Hall site and the mine workings themselves extended below much of north Warrington during coal extraction.

3.9 My own recollection, as a design technician working in the drainage department of the New Town at that time, was that the Peel Hall site was regarded as extremely difficult to drain, and it transpires from

information recently obtained from the Cheshire Record Office that both Helen Jones and myself were correct.

3.10 In1980, having spent the previous four years assessing the Peel Hall site the New Town's action area team concluded that due to drainage and mining constraints in particular the site could only accommodate *'some 175 private dwellings and 10.21 ha of open space. The remaining area will continue to be farmed.'* This was a far cry from the 900 private and rented dwellings that had originally been envisaged for the site in the Padgate District Area Plan.

3.11 The Peel Hall housing development was completed some time around 1984/85 and can be accessed via Ballater Drive. The remainder of the Peel Hall site was eventually sold to the appellant as farmland in September 1988 on the instruction of the then Conservative Government led by Margaret Thatcher.

3.12 Since then the site has been the subject of numerous planning applications spanning a period of more than 30 years. Each of these applications has been met with robust opposition from many local residents throughout north Warrington who wish to retain the site for public use.

4.0 Review of Appellant's Current Hydrology, Drainage and Flood Risk Assessment and Appendices

4.1 This is a review of the current Hydrology, Drainage and Flood Risk Assessment contained in Section 7 of the appellant's ES Addendum, and the accompanying documentation contained in the appellant's ES Volume 3 Appendices.We also make particular reference in the review to the appellant's original Flood Risk Assessment from 2016 and three further documents produced by Warrington Borough Council (WBC), as follows:

4.1.1 WBC Strategic Flood Risk Assessment Volume I - SFRA Guidance Report

4.1.2 WBC Strategic Flood Risk Assessment Volume II - SFRA Technical Report

4.1.3 WBC Local Flood Risk Management Strategy 2017-2023

4.2 For ease of reference each of the paragraphs in the appellant's current Hydrology, Drainage and Flood Risk Assessment which we have chosen to comment upon in this review has been reproduced in this document on its own dedicated page, commencing on page 10 below. All of our comments and observations relating to a particular paragraph can be found immediately after the paragraph in question.

4.3 The appellant's initial Flood Risk Assessment (FRA) was prepared in January 2016 by TPA and approved for issue in June 2016.

4.4 The initial FRA was accompanied by the following appendices:

4.4.1 Appendix A - Site location plan,Topographical Survey, CCTV Report, GI Extract and Draft Masterplan.

4.4.2 Appendix B - United Utilities Asset Maps.

4.4.3 Appendix C - Envirocheck Extract, EA Flood Maps and Warrington SFRA Extract.

4.4.4 Appendix D - Greenfield Calculations and Storage Calculations.

4.4.5 Appendix E - United Utilities Correspondence and Foul Flow Calculations.

4.5 The original FRA from 2016 has recently been updated for the purposes of the 2020 Planning Inquiry. It is contained in Section 7 of the appellant's ES Compendium and is referred to as 'Hydrology,

Drainage and Flood Risk Assessment'. It is essentially the same document that first appeared in June 2016 with some minor additions.

4.6 The appendices which support the current Hydrology, Drainage and Flood Risk Assessment are the same as those which were attached to the appellant's FRA in June 2016. They are contained in the ES Volume 3 Appendices and are designated as follows:

4.6.1 Volume 3 Appendix HYD 1 - Site location plan,Topographical Survey, CCTV Report, GI Extract and Draft Masterplan.

4.6.2 Volume 3 Appendix HYD 2 - United Utilities Asset Maps.

4.6.3 Volume 3 Appendix HYD 3 - Envirocheck Extract, EA Flood Maps and Warrington SFRA Extract.

4.6.4 Volume 3 Appendix HYD 4 - Greenfield Calculations and Storage Calculations.

4.6.5 Volume 3 Appendix HYD 1- United Utilities Correspondence and Foul Flow Calculations.

4.7 Hydrology, Drainage and Flood Risk Assessment
Section 7.2 Site Description
Paragraph 7.2.1

'The topographical survey confirms that the site falls from east to west with levels ranging from approximately 10.32m AOD to the west and 17.97m AOD to the east. A high point is located to the north east with levels at approximately 20.69m AOD. Refer to topographical survey within Volume 3 Appendix HYD 1. A desk top ground study was prepared for the site by Environmental Management Solution Limited. Refer to Volume 3 Appendix HYD 1. According to this study the application site is underlain by Glaciofluvial deposits comprising sand and gravel. The British Geological Survey (BGS) records indicate that the bedrock geology at the development is formed of Chester Pebble Beds Formation which comprises sandstone. The BGS borehole logs confirm that clay gravel and sand form the superficial strata at the application site.'

4.8 Comments

4.8.1 The above statement *'refer to topographical survey within Volume 3 Appendix HYD1'* is incorrect. There is no evidence of a topographical survey in Volume 3 Appendix HYD 1 or its predecessor from 2016, Appendix A.

4.8.2 The above statement *'a desk top ground study was prepared for the site by Environmental Management Studies Ltd. Refer to Volume 3 Appendix HYD 1'* is difficult to understand. Only three pages of the desk top study can be found, and there is no explanation in the FRA as to their relevance. In addition the pages in question are located in Volume 3 Appendix HYD 3, not Volume 3 Appendix HYD 1.

4.9 Hydrology, Drainage and Flood Risk Assessment
Section 7.2 Site Description
Paragraph 7.2.2 Existing Drainage Networks and Water Supply

'Sewer maps provided by United Utilities confirm an existing clean water supply pipe runs adjacent to Peel Cottage Lane and runs to Peel Hall. According to this mapping there are also existing public sewers crossing the western end of the application site. Existing foul and surface water sewers are located to the east at Mill Lane and to the west within the existing residential development at Poplars Avenue. Refer to Volume 3 Appendix HYD 2.'

4.10 Comments

4.10.1 Volume 3 Appendix HYD 2 consists of a single A4 sheet showing a number of public sewers at the western end of the application site. There is no record provided of the existing clean water supply pipe running to Peel Hall nor the existing foul and surface water sewers located to the east at Mill Lane.

4.11 Hydrology, Drainage and Flood Risk Assessment
Section 7.3 Flood Risk
Paragraph 7.3.3

'A Strategic Flood Risk Assessment (SFRA) was prepared by Jeremy Benn Associates (JBA) in 2011 for Warrington Borough Council. A Flood Risk Management Strategy was also prepared by the Environment Agency (EA) in March 2011, in which sub-catchments have been identified as areas at risk and how flooding can be managed. The application site is not located within any of these areas and is not identified within the SFRA as being at risk of flooding.'

4.12 Comments

4.12.1 The SFRA in question was prepared for WBC in two separate volumes. Volume 1 - SFRA Guidance Report is a 60 page document which introduces the process of the WBC SFRA. Volume 2 - SFRA Technical Report is an 85 page document which provides the detailed flood risk assessment collected and produced as part of the Level 1 and Level 2 assessment. The appellant has appended seven pages and the front cover of Volume 2 to his flood risk assessment in support of his application.

4.12.2 Firstly we have noted that there is no cross referencing between the appellant's FRA and the SFRA pages. Hence it is extremely difficult for the reader to understand the appellant's statements in the FRA in the light of the small amount of documentation attached.

4.12.3 However it is clear that Peel Hall itself is never mentioned by name in either of the two volumes of the SFRA, and there is nothing in either document to suggest that the site ever formed part of the SFRA undertaken by WBC in the first place. Hence we believe that the claim by the appellant that *'the site is not identified within the SFRA as being at risk of flooding'* is irrelevant given its continued status as a greenfield site and its non-appearance in the SFRA.

4.12.4 We also take the view that any conclusions derived from the SFRA in relation to the Peel Hall site should not be taken in isolation and without reference to the surrounding catchments. In that respect there are a number of statements in Volume 2 of the SFRA which clearly demonstrate that certain areas downstream from Peel Hall are at serious risk of flooding.

4.13 Hydrology, Drainage and Flood Risk Assessment
Section 7.3 Flood Risk
Paragraph 7.3.4 Tidal and Fluvial Flooding

'The SFRA confirms that the main sources of flooding in Warrington are the River Mersey and its 5 key tributaries (Sankey, Padgate, Spittle, Penketh and Whittle Brooks). The development is not within the vicinity of any of these sources. According to the EA map the nearest major watercourse is the Cinnamon Brook, this is approximately 125m from the development. There are minor watercourses and ponds located within the application boundary however according to the EA map these do not pose a risk to the site.'

4.14 Comments

4.14.1 The WBC Flood Risk Management Strategy 2017-2023 Paragraph 3.3.2 confirms that all watercourses within Warrington have been identified using the EA's Detailed River Network and are classified as either main river or ordinary watercourse. Cinnamon Brook is designated as an ordinary watercourse, not a major watercourse as described above.

4.14.2 The nearest watercourses to the site which are classified as main rivers are Mill Brook to the west and Black Brook to the east.

4.14.3 The appellant states that *'there are minor watercourses and ponds located within the application boundary, however according to the EA map these do not pose a risk to the site*.' The minor watercourses to which the appellant refers include the Spa Brook which represents the main watercourse for the discharge of surface water from the proposed development site.

4.14.4 It is incorrect to state that *'the development is not within the vicinity of any of these sources.'* In actual fact the proposed development is well within the catchment of Sankey Brook, and Spa Brook itself discharges to Sankey Brook via Mill Brook and Dallam Brook.

4.14.5 Once again we take the view that any conclusions derived from the SFRA in relation to the Peel Hall site should not be taken in isolation and without reference to the surrounding main rivers and ordinary watercourses. The Spa Brook connects to and forms part of a major network of watercourses downstream from the proposed development and it has to be considered and dealt with in that context.

4.15 Hydrology, Drainage and Flood Risk Assessment
Section 7.3 Flood Risk
Paragraphs 7.3.5/7.3.6/7.3.7 Groundwater Flooding
Paragraph 7.3.8 Overland Flooding

Paragraph 7.3.5 Groundwater Flooding
'The EA indicative flood map confirms that the application site is located within a Zone 3 groundwater source protection zone. This is described by the EA as:
'Defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. In confined aquifers, the source catchment may be displaced some distance from the source. For heavily exploited aquifers, the final Source Catchment Protection Zone can be defined as the whole aquifer recharge area where the ratio of groundwater abstraction to aquifer recharge (average recharge multiplied by outcrop area) is >0.75. There is still the need to define individual source protection areas to assist operators in catchment management;'

Paragraph 7.3.6 Groundwater Flooding
The Envirocheck report within the desk top study for Phase 1 of the development, that the drinking water source itself is located approximately 560m to the north of the site. The sites groundwater is also assumed to be moderately to highly susceptible to groundwater contamination.

Paragraph 7.3.7 Groundwater Flooding
According to the EA groundwater maps the application site is underlain by secondary A aquifers, which are described as:
Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

Paragraph 7.3.8 Overland Flooding
As previously mentioned the site falls from east to west and bounded by the M62 to the north and existing residential development at Mill Lane to the east which will act as a cut off preventing overland flow from reaching the development. Due to topography, any overland flow from the south and west will flow away from the development. Surface water from the development will be managed on-site and will be restricted to Greenfield run-off rate; therefore the risk of overland flooding causing by the development is negligible.'

4.16 Comments

4.16.1 In 2012 the appellant submitted a planning application for a proposed 150 home development on part of the Peel Hall site, as follows:

‘2012/20610
Land off Mill Lane (part of Peel Hall Farm) and land at Windermere Avenue and Grasmere Avenue. Outline application for 150 homes off Mill Lane, sports pitches refurbishment at Windermere Avenue and Grasmere Avenue.
Applicant - Satnam Investments Ltd, 17 Imperial Square, Cheltenham.
Application Date - 07/08/12
Appeal Date - 29/05/13
Appeal dismissed - 31/07/13
Reasons - Highway safety, scheme does not accord with national planning policy, release of land prejudicial to council's approach, lack of adequate material considerations.’

4.16.2 The FRA which was undertaken at that time by the appellant’s representatives at TPA contains an email from Mark Thewsey of the Environment Agency dated 17th January 2012 in which he replies to Alex Halford of TPA on the question of soakaway drainage for the proposed Mill Lane development.

4.16.3 The reply from Mark Thewsey is extremely thorough and it goes into great detail about the potential for groundwater flooding and overland flooding across the whole of the proposed Peel Hall site and not just the section under consideration at that time.

4.16.4 The email also describes in some detail the source of the Spa Brook and the manner in which water has been abstracted from Spa Well for the public supply for over 140 years. This is a matter which we will return to later in this review.

4.16.5 We believe that the details provided by Mark Thewsey are crucial to any future proposals for the Peel Hall site. In particular we think that the matters he outlines with regard to groundwater flooding, overland flooding and soakaways should be investigated thoroughly at the earliest possible opportunity and simply not left to chance.

4.16.6 A copy of the original email from Mark Thewsey is enclosed in a separate pdf as Appendix A. We have reproduced several paragraphs of that email below which highlight some of the major issues to which he refers, and we believe that they are self explanatory.

‘To the north of the Motorway at a place called Spa Well there used to rise a substantial spring which formed the commencement of Spa Well Brook that then flowed SW and across your wider site before passing under Poplars Avenue and onward to ultimately join Sankey Brook.

This spring effectively stopped discharging during development of water gathering tunnels beneath for a public supply well extension in 1878, and thereafter the Brook had very little dry weather flow in it headwaters. The watercourse from Spa Well to the present M62 thereafter became little more than an agricultural ditch.

Many decades after this artificial diminution in Spa Well flow took place, Spa Brook downstream of your site was incorporated into a culvert/pipe drainage system beneath the expanding housing area of Hulme.

Historically local groundwater levels at/near your site have been controlled, usually well below surface, by the substantial public water supply abstractions made from the underlying sandstone.

From the mid 1990s, for operational reasons, there was a long period of non-abstraction by the local groundwater pumping stations, allowing water levels to return to the historical natural levels before abstraction recommenced on a smaller scale than before in 2008/2009.

While the pumping stations were off, local groundwater levels quickly rose to surface in the low-lying areas to the north of the motorway, where the sandstone is either exposed or generally covered only by a thin veneer of sand. This gave rise to significant groundwater flooding in that area, probably made worse by the land having been also slightly lowered by mining in the 1960s to 1980s.

To the south of the motorway, despite the land being similar or even slightly lower along Spa Brook, this groundwater flooding problem did not seem to prevail to the same extent, or at least not so as to cause such an obvious problem.

Upon investigation by desk study, it would seem that this lesser groundwater flooding problem was probably on account of a layer of clay developed here between the underlying sandstone and the thin sandy soils at surface. This clay, although very thin, appears to have served as an intervening aquitard suppressing a probably small Artesian head of groundwater beneath it.

Field drainage of the superficial sand above this clay layer was probably helped by the presence of a few former agricultural land drains or ditches remaining in the fields that comprise your wider site.

At the time of the persistent high groundwater levels (mid 1990s through to circa late 2000s when the local abstractions finally resumed) it struck me that any development perforating this thin clay mantle just below the

surface, might initiate a significant outflow of water to surface from the underlying sandstone.

As such I would suggest the development, or even site investigations that perforate this might cause a problem in the future if it is left unsealed.

This would not only cause a risk of groundwater discharge and flooding on site, but may perhaps exacerbate any limitations in the capacity of the now culverted Spa Brook downstream. (N.B. I do not know if there are any such limitations, but I am mindful that when the culvert was built, the flow would have been much less than the historical norm, and of course the catchment has since been largely built over with substantial paved areas).

At present the local groundwater abstractions are active again, but on a much smaller scale than in the past. There is no guarantee that they would always keep operating, and there is certainly no obligation upon them to do so.

As such, it seems only fair to warn you of the potential drainage difficulties or risks that may prevail on this site - especially in the low-lying areas where the potential for groundwater discharge is greatest, especially if the excavations should pierce the thin clay layer.

Fortunately the Superficial deposits across this site are already well characterised by many logs drilled in the late 1970s, but it is important to be aware that any water level details on those logs will not be representative of the much higher levels that were achieved between 1996 and 2008, and which may be achieved again from time to time in the future.

I should also point out that the higher ground in the vicinity of your phase one area probably makes that part of the site relatively immune to this problem, which is probably the best of the good news that I can offer.

As far as soakaway prospects are concerned, beware misleadingly favourable groundwater levels in site investigations done either before 1996 or since 2008 up to the present.

If you have groundwater level data obtained circa 1997 to 2007, then that is probably reasonably representative of the high 'natural' groundwater levels.'

4.16.7 Please note that the contents of the email from Mark Thewsey are discussed further in Section 7 of this review.

4.17 Hydrology, Drainage and Flood Risk Assessment
Section 7.3 Flood Risk
7.3.9 Sewer Flooding

'The United Utilities DG5 records are provided within the SFRA. These records show a data set of all properties that have been previously flooded by a drainage system. The application site is not highlighted on this plan as being at risk of flooding from the existing sewerage network and therefore flood risk due to sewers is considered to be low. Areas to the north east and south are also highlighted as low risk and the area to the west is considered as medium risk. Refer to Volume 3 Appendix HYD 3'.

4.18 Comments

4.18.1 In paragraph 4.12.3 of this review we stated that Peel Hall itself is never mentioned by name in either of the two volumes of the SFRA, and that there is nothing in either document to suggest that the site ever formed part of the SFRA undertaken by WBC in the first place. Hence we believe that the claim above by the appellant that *'the application site is not highlighted on this plan as being at risk of flooding from the existing sewerage network'* is incorrect simply because Peel Hall should never have been considered in that context. In reality the site is simply a greenfield site with very few houses located on it.

4.19 Hydrology, Drainage and Flood Risk Assessment
Section 7.3 Flood Risk
Paragraph 7.3.10 Surface Water Flooding

According to the EA flood maps, the application site is at low risk of surface water flooding. According to the SFRA there are certain locations within Warrington that are at risk of surface water flooding. The critical drainage map within the SFRA confirms that development does not fall within a critical drainage area. However land to the east south and west are within critical drainage areas, according to the SFRA there are a number of culverts through the area which if unmaintained could increase flood risk. Surface Water from the development will be managed on-site via attenuation and will be restricted to the existing run-off rate.'

4.20 Comments

4.20.1 The WBC SFRA Volume II highlights two areas in particular downstream from the proposed site that are deemed to be *'Warrington Critical Drainage Areas'* according to the SFRA, namely the Longford and Orford area and the Dallam area.

4.20.2 In that respect Paragraph 3.5.2 in Volume II of the SFRA confirms that *'The Orford area is at significant risk of flooding from a range of flood events'.*

4.20.3 In addition the Longford surface water flooding map comparison which is set out on Page 24 of Volume II of the SFRA shows severe flooding for both scenarios in the vicinity of Densham Avenue and Northway. Both of these locations are prone to flooding, and both are located only a very short distance downstream from the Peel Hall site.

4.20.4 We also reproduce two entries from Table 4-2 'Warrington Critical Drainage Areas' on Page 35 of Volume II of the SFRA, as follows:

Longford and Orford
'The risk associated with both the Longford and Orford drainage areas are similar in that they include the risk associated with Longford Brook, its contributing urban drainage and mechanisms downstream including the United Utilities pumping station and Sankey Brook confluence. There is also an interaction between Padgate Brook during flood events and water flows over into Longford Brook. There are a high number of historical flood records in this area. Development may have to look at alternative connections other than the current surface water drainage systems. ***It is recommended that it is one of the hotspot areas for further assessment of any upcoming Warrington SWMP.'***

Dallam

'Dallam drainage area is located on the confluences of a number of watercourses including Longford, Dallam and Sankey Brook. Both Longford and Dallam Brook could be classified as urban watercourses as they receive the majority of the inflow from urban drainage and are heavily modified and culverted in sections. Flood risk is high is this area due to the interaction between a number of sources: fluvial, surface water and the drainage system. There are a number of redevelopment sites identified in this area, unless managed, could increase risk.'

4.20.5 Since we commenced this review in March 2020 WBC has announced a further flood relief scheme for Densham Avenue and Northway. This follows on from work undertaken near to Densham Avenue in 2012 which is referred to as Appendix B in the pdf which accompanies our review. Work will commence in August 2020 to construct a new pumping station in Dallam which WBC say will alleviate flooding in Densham Avenue and Northway in particular.

4.20.6 It is not clear from the information provided whether there has been a catchment-wide approach to flood alleviation in this area or whether it is simply a scheme local to Densham Avenue. If there has been a catchment-wide approach then you would expect Peel Hall to be included, and for the appellant's FRA to acknowledge this given his comment above that *'land to the east south and west are within critical drainage areas, according to the SFRA there are a number of culverts through the area which if unmaintained could increase flood risk'.* We note however that there is no mention in the appellant's FRA of these proposals.

4.20.7 According to the FRA the appellant intends to discharge surface water to Dallam Brook via Spa Brook and Mill Brook. In addition the appellant highlights a drainage ditch as a means of discharge within the application boundary which connects to Dallam Brook via a large diameter culvert which runs via Densham Avenue and Northway.

4.20.8 However he makes no attempt in the FRA to explain how he proposes to deal with these issues other than to continue to restate that *'surface water from the development will be managed on-site via attenuation and will be restricted to the existing run-off rate.'* Crucially there is nothing in the appellant's FRA to suggest that there has been an integrated approach to the problems associated with the critical drainage areas downstream from the Peel Hall site.

4.21 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.1 Existing Surface Water Drainage

'The United Utilities maps confirm there are no public surface water sewers crossing the development site. An existing domestic kennels and dwelling are located within the development but do not form part of the application boundary. The site is currently Greenfield; it is proposed that discharge from the proposed development will be restricted to the existing QBAR as calculated using the HR Wallingford IH124 Greenfield run-off calculation. QBAR has been calculated as 334.8 l/s, refer to Volume 3 Appendix HYD 4.'

4.22 Comments

4.22.1 The statement above '*The United Utilities maps confirm there are no public surface water sewers crossing the development site*' contradicts the statement in Paragraph 7.2.2 Existing Drainage Networks and Water Supply which states that *'According to this mapping there are also existing public sewers crossing the western end of the application site'.*

4.23 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
7.4.2 Proposed Surface Water Drainage Strategy

'The hierarchy of surface water disposal stated within The Building Regulations approved document Part H is as follows:
- *An adequate soakaway/infiltration system*
- *A watercourse*
- *A sewer*

The proposed options of surface water discharge include the following:
- *SuDS.'*

4.24 Comments

4.24.1 The appellant's statement above has been abstracted from the Building Regulations approved document Part H. Its inclusion contributes nothing technically to the FRA other than to reaffirm what is an accepted hierarchy for the disposal of surface water.

4.25 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.3

It is proposed that surface water from the development is restricted to the QBAR rate of 334.8l/s.

4.26 Comments

4.26.1 The above statement simply repeats the wording contained in Paragraph 7.4.1 of the FRA.

4.27 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.4/Paragraph 7.4.5

Paragraph 7.4.4
The desk top study prepared by Environmental Management Solution Ltd indicates that the superficial strata at the site is formed from gravel and sand, therefore infiltration drainage may be feasible at the development, however the site is also located within a groundwater source protection zone and therefore discussions with Environment Agency as the design progresses will need to be undertaken in order to agree what areas could be utilised for soakaway drainage but at the same time protect the groundwater from contamination.

Paragraph 7.4.5
Due to this reason and to avoid causing any contamination to groundwater soakaways we would need to make sure areas that go to a soakaway are areas that do not generate or have a risk of generating contamination to groundwater.

4.28 Comments

4.28.1 We have covered this matter extensively in Paragraph 4.15 and Paragraph 4.16 above where we discuss the information provided by Mark Thewsey of the EA in his email dated 17 January 2012.

4.28.2 In his email Mr Thewsey provides the following summary:

'The low-lying parts of the site may be vulnerable to a very high water table or even groundwater flooding, and may therefore be unsuitable for soakage.

If any attempts are made to excavate deep soakaways in the lower lying parts a of the site, which is a practice that the EA normally resists anyway for anything other than clean, non-industrial roof-water soakaways, (because of the risk of direct discharge of pollutants such as fuels, herbicides, pesticides, and deicing agents) then there may be a significant risk that from time to time these would be prone to drown out or even cause artesian discharge, which may result as a result of 'groundwater flooding' events when local abstractions stop.'

4.29 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.6 Watercourses

'There are existing ponds and minor watercourses located within the application site including the Spa Brook. It is proposed that surface water from the development will discharge to these minor watercourses at the restricted run off rate. The Spa Brook is located to the west of the application site and appears to be culverted to the rear of the existing properties at Poplars Avenue. United Utilities records suggest that this drains to Mill Brook behind the Alban Retail Park. It is assumed that flows from the site restricted to the Greenfield rate will be able to discharge into this surface water system with a system of onsite attenuation as proposed. Further modelling of this pipe may be requested.'

4.30 Comments

4.30.1 The Spa Brook is an ordinary watercourse according to the EA classification, not a minor watercourse.

4.30.2 The email from Mark Thewsey of the EA that we refer to in Paragraph 4.16 in respect of a previous planning application in 2012 provides accurate details of the Spa Brook, including details of the Spa Brook's recent history, as follows:

'To the north of the Motorway at a place called Spa Well there used to rise a substantial spring which formed the commencement of Spa Well Brook that then flowed SW and across your wider site before passing under Poplars Avenue and onward to ultimately join Sankey Brook.

This spring effectively stopped discharging during development of water gathering tunnels beneath for a public supply well extension in 1878, and thereafter the Brook had very little dry weather flow in it headwaters. The watercourse from Spa Well to the present M62 thereafter became little more than an agricultural ditch.

Many decades after this artificial diminution in Spa Well flow took place, Spa Brook downstream of your site was incorporated into a culvert/pipe drainage system beneath the expanding housing area of Hulme.'

4.30.3 The information set out above was sent to the appellant's representative in 2012 in respect of an earlier planning application. However the appellant has not provided any of these details for inclusion in the current FRA and appendices. Hence it is still unclear how he proposes to utilise the Spa Brook for the purposes of discharging surface water from the Peel Hall site.

4.30.4 Our own investigation would suggest that the Spa Brook is culverted from a point close to the apartments on Poplars Avenue at the southern end of the appeal site through to Mill Brook located approximately a half mile to the south.

4.30.5 The discharge point at Mill Brook is located to the west of the Junction 9 retail park on Winwick Road, and Mill Brook itself discharges to Dallam Brook a short distance downstream. In turn Dallam Brook passes beneath Hawley's Lane before it discharges to Sankey Brook approximately 500m downstream near to Southworth Avenue.

4.30.6 Mr Thewsey has also provided certain advice regarding the ability of the Spa Brook culvert to deal with future surface water discharges from the site, as follows:

'At the time of the persistent high groundwater levels (mid 1990s through to circa late 2000s when the local abstractions finally resumed) it struck me that any development perforating this thin clay mantle just below the surface, might initiate a significant outflow of water to surface from the underlying sandstone.

As such I would suggest the development, or even site investigations that perforate this might cause a problem in the future if it is left unsealed.

This would not only cause a risk of groundwater discharge and flooding on site, but may perhaps exacerbate any limitations in the capacity of the now culverted Spa Brook downstream. (N.B. I do not know if there are any such limitations, but I am mindful that when the culvert was built, the flow would have been much less than the historical norm, and of course the catchment has since been largely built over with substantial paved areas).

At present the local groundwater abstractions are active again, but on a much smaller scale than in the past. There is no guarantee that they would always keep operating, and there is certainly no obligation upon them to do so.'

4.30.7 Once again we would point out that the above information was never included in the current FRA despite the fact that it was sent to the appellant's representative in 2012. Indeed there is no information whatsoever in the current FRA regarding the size, condition or the ability of the Spa Brook culvert to convey surface water away from the site.

4.31 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.7

'In addition to Spa Brook, there appears to be a drainage ditch located within the application boundary. This ditch is connected to Dallam Brook via a large diameter culvert which runs via Densham Avenue and Northway.'

4.32 Comments

4.32.1 The appellant has not provided any information relating to the drainage ditch located within the application boundary or the manner in which it connects to Dallam Brook via Densham Avenue and Northway.

4.33 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.8

'The area to the north west of the site which will comprise the employment space and residential units falls to the North West. It is proposed that surface water from the development will discharge to the watercourses at the restricted rate, attenuation will be used to achieve this. Discharge to this existing drainage ditches and watercourse will require consent from the Local Authority and may require discharge consent.'

4.34 Comments

4.34.1 The employment space referred to above is not part of this inquiry. It was included in the Option B proposal for Peel Hall which was submitted to the 2018 inquiry and subsequently withdrawn by the appellant part way through.

4.35 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.9

'The QBAR for the whole development has been calculated as 334.8 l/s. This will be pro rata'd per sub-catchment and the storage requirement will be based on this restricted rate.'

4.36 Comments

4.36.1 The above statement repeats the wording contained in Paragraph 7.4.1 and 7.4.3 of the FRA. It also introduces a chart in the FRA which sets out the proposals for eleven ponds to be constructed across the site for attenuation purposes. However the appellant has not provided any details of these ponds in his FRA nor has he provided a plan showing their proposed location.

4.37 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.10 Water Quality

'Due to the application site being in a groundwater protection zone, groundwater quality needs to be controlled to limit any contamination from the development. It is proposed that a two stage treatment will be provided, initially using lined permeable paving with this discharging to the designated ponds and secondly via the ponds themselves. The commercial areas in particular will require use of permeable paving and oil separators where appropriate.'

4.38 Comments

4.38.1 The appellant proposes that *'a two stage treatment will be provided, initially using lined permeable paving with this discharging to the designated ponds and secondly via the ponds themselves.*' It is difficult to understand what this statement actually means given that so little detail has been provided. In that respect there is no information relating to any early discussions the appellant may have had with the EA relating to groundwater and Zone 3 protection.

4.39 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Paragraph 7.4.11 Attenuation Features
Paragraph 7.4.12 Attenuation Ponds
Paragraph 7.4.13 Permeable Paving

Paragraph 7.4.11 Attenuation Features
'Potential use of SuDS have been considered for the attenuation of surface water on-site and are listed below, infiltration drainage cannot be used at the site due to the development being located within in groundwater protection zone. Water quality has also been considered when proposing the following attenuation features:'

Paragraph 7.4.12 Attenuation Ponds
'It is proposed that surface water from the development will discharge to attenuation ponds which in turn will discharge to the existing watercourses and ditches within the site. The discharge into these watercourses will be restricted to QBAR rates listed above in Table 1.'

Paragraph 7.4.13 Permeable Paving
'Further attenuation can be provided using permeable paving for private drive areas. Permeable paving would be beneficial as it allows for a reduction of the occurrence of runoff flooding. Permeable paving would also improve water quality by filtration through the pavement as they are an effective initial method of removing total suspended solids, heavy metals and hydrocarbons from runoff.'

4.40 Comments

4.40.1 Paragraph 7.4.11 above states that *'infiltration drainage cannot be used at the site due to the development being located within in groundwater protection zone.'*

4.40.2 This statement appears to contradict Paragraph 7.4.4 which states that *'infiltration drainage may be feasible at the development.....therefore discussions with Environment Agency as the design progresses will need to be undertaken in order to agree what areas could be utilised for soakaway drainage.'*

4.40.3 Paragraph 7.4.12 simply repeats what has already been stated a number of times throughout the FRA with regard to attenuation and the QBAR runoff rate.

4.41 Hydrology, Drainage and Flood Risk Assessment
Section 7.4 Proposed Surface Water Drainage Strategy
Section 22 Response

'Paragraph 7.4.14
Given the outline nature of the application, it is not considered that a full Water Framework Directive (WFD) assessment is necessary and that it should be conditioned as part of the outline planning permission to be undertaken as part of a reserved matters application, where a more detailed drainage strategy will be completed.'

'Paragraph 7.4.15
The development proposals, in tandem with the surface water and foul water management strategies, will be tailored throughout the detailed design process to ensure that there is no adverse impact on water and ground water as a result of the development. Additionally, given the outline nature of the application, information required to complete a full WFD assessment is not available, and as such it is not considered necessary to undertake the WFD assessment at this stage.'

'Paragraph 7.4.16
However, for the purposes of ensuring a complete response to the matters raised by the Planning Inspectorate, a preliminary WFD assessment has been undertaken (document reference: 1506-45/TN/03, dated November 2017) and is contained within Volume 3 Appendix HYD 5.'

4.42 Comments

4.42.1 Paragraph 7.4.16 above states that *'a preliminary WFD assessment has been undertaken (document reference: 1506-45/TN/03, dated November 2017) and is contained within Volume 3 Appendix HYD 5.'*

4.42.2 However our review of the FRA and appendices has confirmed that no such document is contained within Volume 3 Appendix HYD 5 or anywhere else in the appellant's FRA documentation.

4.43 Hydrology, Drainage and Flood Risk Assessment
Section 7.5 Proposed Foul Water Drainage Strategy
Paragraph 7.5.1 Existing Foul Flow

'An existing dwelling and kennels are located within the site but these do not form part of the application boundary, therefore the site is considered to be greenfield.'

4.44 Comments

4.44.1 The paragraph above is entitled 'Existing Foul Flow.' However it fails to mention the existing foul flow referred to in Paragraph 7.2.2 of the appellant's FRA where he states that *'according to this mapping there are also existing public sewers crossing the western end of the application site.'*

4.45 Hydrology, Drainage and Flood Risk Assessment
Section 7.5 Proposed Foul Water Drainage Strategy
Paragraph 7.5.2 Proposed Foul Flow

'The proposed development will comprise up to circa 1300 new residential dwellings, commercial areas and a school. Based upon Sewers for Adoption 7th Edition and British Water Flows and Loads the foul flow has been calculated as: 64.52 l/s. This flow has been based on the following assumptions, refer to Foul Flow calculations within Volume 3 Appendix HYD 5:

Commercial Area:
Employment zone comprising approximately 150 members of staff and Supermarket comprising 80 members of staff

School:
Comprising approximately 180 pupils and 25 members of staff

Retirement Housing:
Comprising approximately 60 residents'

4.46 Comments

4.46.1 The proposed development is comprised of up to 1200 dwellings and apartments, not *'up to circa 1300 new residential dwellings'* as stated above.

4.46.2 There is no *'retirement housing comprising approximately 60 residents'* planned for the development. This should say *'residential care home*'. To date this construction has an undisclosed number of residents and care staff.

4.46.3 There is no mention of the public house/family restaurant planned for the development.

4.46.4 There is no mention of any of the other establishments planned for the development, including financial and professional services, restaurants and cafes, drinking establishments and hot food takeaways.

4.46.5 The appellant refers above to an *'employment zone comprising approximately 150 members of staff.'* However the employment zone in question was removed in the course of the 2018 inquiry and hence does not form part of the current proposals for the site.

4.46.6 We understand that Sewers for Adoption 7th Edition will be superseded later in 2020.

4.46.7 British Water Flows and Loads was prepared by the British Water Package Sewage Treatment Plant Focus Group for non-mains sewage treatment systems. The details confirm that the table of leadings may be used to design all sizes of sewage treatment systems serving up to 1000 population.

4.46.8 The '*Foul Flow calculations within Volume 3 Appendix HYD 5'* are based upon:

- 1300 dwellings, when the proposed development is actually comprised of up to 1200 dwellings and apartments.
- 230 commercial staff, a figure which includes 150 from the employment zone which was removed from the proposals in the course of the 2018 inquiry.
- 60 care home residents, when the actual figure is still unknown.

In addition there is no reference in the foul flow calculations to the public house/family restaurant, the financial and professional services, restaurants and cafes, drinking establishments and hot food takeaways.

4.47 Hydrology, Drainage and Flood Risk Assessment
Section 7.5 Proposed Foul Water Drainage Strategy
Paragraph 7.5.3 Proposed Foul Water Drainage Strategy

'Foul networks are located to the east at Mill Lane, to the west at Windermere Lane, and to the west within the site boundary. Any sewers located within the application site will require easements either side. The sewer sizes have been confirmed as a maximum of 225mm on the existing site so assuming that these are laid at no deeper than 3m cover to invert then a 3m easement will need to be provided for these pipes in line with the statutory requirement defined by the statuary undertaker. United Utilities have not given a preference for a point of connection but have no objection with foul flows communicating with their sewers, preferably via a gravity connection. Refer to correspondence within Volume 3 Appendix HYD 5.'

4.48 Comments

4.48.1 The appellant states that *'foul networks are located to the.....west at Windermere Lane.'* In fact there are foul sewers located to the south of the proposed development at Windermere Avenue.

4.48.2 The correspondence from United Utilities in Volume 3 Appendix HYD 5 to which the appellant refers is dated 27th October 2015. It confirms that *'this pre-development advice will be valid for 12 months.*' At the time of compiling this review we note that the correspondence from United Utilities is almost 4 years out of date.

4.49 Hydrology, Drainage and Flood Risk is Assessment
Section 7.6 Conclusions and Recommendations

'Paragraph 7.6.1
This report concludes that the development is not at risk of fluvial, tidal, overland or groundwater flooding and will not increase flooding to surrounding catchments.'

'Paragraph 7.6.2
It is proposed that surface water from the development will be restricted to the existing Greenfield run-off rate of 334.8l/s.'

'Paragraph 7.6.3
The site is located within a groundwater source protection zone and therefore to prevent any contamination, surface water infiltration drainage will need to be subject to Environment Agency confirmation. Areas contributing to soakaways will need to be carefully designed and selected so they do not pose any risk of contamination to groundwater.'

'Paragraph7.6.4
It is proposed that surface water from the development will discharge to the watercourses at the restricted rate; attenuation will be used to achieve this. Discharge to this existing drainage ditches and watercourse will require consent from the Local Authority and may require discharge consent.'

Paragraph7.6.5
CCTV has been carried out to determine the nature and condition of onsite drainage features.

'Paragraph 7.6.6
Due to the application site being located within a groundwater protection zone, groundwater quality needs to be controlled to limit any contamination from the development.'

Paragraph 7.6.7
United Utilities have not given a preference for a point of connection but have no objection with foul flows communicating with their sewers, preferably via a gravity connection.

'Paragraph7.6.8
Foul capacity has been confirmed at a rate of 64.52l/s.'

'Paragraph 7.6.9
A minimum of 3m easements are required for all existing on site drainage owned by United Utilities in line with the statuary requirement.'
'Paragraph 7.6.10

A preliminary WFD assessment has been undertaken which concludes that the proposed development is not considered to have an impact on the current ecological and chemical quality of the local rivers and watercourses.'

4.50 Comments

4.50.1 The appellant has not provided any firm evidence in his FRA to support the statement in Paragraph 7.6.1 that *'the development is not at risk of fluvial, tidal, overland or groundwater flooding and will not increase flooding to surrounding catchments'.*

4.50.2 The comment in Paragraph 7.6.3 of the FRA that '*surface water infiltration drainage will need to be subject to Environment Agency confirmation'* appears to contradict the comment in Paragraph 7.4.11which states that *'infiltration drainage cannot be used at the site due to the development being located within in groundwater protection zone.'*
In turn Paragraph 7.4.11 of the FRA appears to contradict Paragraph 7.4.4 which states that *'infiltration drainage may be feasible at the development.....therefore discussions with Environment Agency as the design progresses will need to be undertaken in order to agree what areas could be utilised for soakaway drainage.'*

4.50.3 The statement in Paragraph 7.6.7 is based upon correspondence that is almost 4 years out of date.

4.50.4 Our review of the FRA and appendices has confirmed that the preliminary WFD referred to in Paragraph 7.6.10 above has not been included within Volume 3 Appendix HYD 5 or anywhere else in the appellant's FRA documentation.

5.0 Current Site-Specific Flood Risk Assessment Guidelines

5.1 The site-specific flood risk assessment guidelines and the accompanying checklist set out in Paragraph 5.2 and Paragraph 5.3 below have been abstracted from the Flood Risk and Coastal Change guidance documents set out on the GOV.UK website. They advise how to take account of and address the risks associated with flooding and coastal change in the planning process. We have included them in our review because we believe that they provide an appropriate yardstick by which to measure the contents of the appellant's flood risk assessment.

5.2 Guidelines

'A site-specific flood risk assessment is carried out by (or on behalf of) a developer to assess the flood risk to and from a development site. Where necessary the assessment should accompany a planning application submitted to the local planning authority. The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users.

The objectives of a site-specific flood risk assessment are to establish:

- whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- the evidence for the local planning authority to apply (if necessary) the Sequential Test, and;
- whether the development will be safe and pass the Exception Test, if applicable.

The information provided in the flood risk assessment should be credible and fit for purpose. Site-specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available, including information in a Strategic Flood Risk Assessment for the area, and the interactive flood risk maps available on the Environment Agency's web site.

A flood risk assessment should also be appropriate to the scale, nature and location of the development.'

5.3 Site-specific flood risk assessment: Checklist

5.3.1 Development site and location

a. Where is the development site located?

b. What is the current use of the site?

c. Which Flood Zone is the site within?

5.3.2 Development proposals

a. What are the development proposal(s) for this site? Will this involve a change of use of the site and, if so, what will that change be?

b. In terms of vulnerability to flooding, what is the vulnerability classification of the proposed development?

c. What is the expected or estimated lifetime of the proposed development likely to be? (eg less than 20 years, 20-50 years, 50-100 years?).

5.3.3 Sequential test

Not applicable - development site is wholly within flood zone 1

5.3.4 Climate Change

a. How is flood risk at the site likely to be affected by climate change?

5.3.5 Site specific flood risk

a. What is/ are the main source(s) of flood risk to the site?

b. What is the probability of the site flooding, taking account of the maps of flood risk available from the EA, the local planning authority's Strategic Flood Risk Assessment and any further flood risk.

c. Are you aware of any other sources of flooding that may affect the site?

d. What is the expected depth and level for the design flood?

e. Are properties expected to flood internally in the design flood and to what depth?

f. How will the development be made safe from flooding and the impacts of climate change for its lifetime?

g. How will you ensure that the development and any measures to protect the site from flooding will not cause any increase in flood risk off-site and elsewhere?

h. Are there any opportunities offered by the development to reduce the causes and impacts of flooding?

5.3.6 Surface water management

a. What are the existing surface water drainage arrangements for the site?

b. If known, what (approximately) are the existing rates and volumes of surface water run-off generated by the site?

c. What are the proposals for managing and discharging surface water from the site, including any measures for restricting discharge rates?

d. How will you prevent run-off from the completed development causing an impact elsewhere?
e. Where applicable, what are the plans for the ongoing operation and/or maintenance of the surface water drainage systems?

5.3.7 Occupants and users of the development

a. Will the development proposals increase the overall number of occupants and/or people using the building or land, compared with the current use? If this is the case, by approximately how many will the number(s) increase?
b. Will the proposals change the nature or times of occupation or use, such that it may affect the degree of flood risk to these people? If this is the case, describe the extent of the change.
c. Where appropriate, are you able to demonstrate how the occupants and users that may be more vulnerable to the impact of flooding (eg residents who will sleep in the building; people with health or mobility issues etc) will be located primarily in the parts of the building and site that are at lowest risk of flooding? If not, are there any overriding reasons why this approach is not being followed?

5.3.8 Exception test

Not applicable - development site is wholly within flood zone 1

5.3.9 Residual risk

a. What flood related risks will remain after the flood risk management and mitigation measures have been implemented?
b. How, and by whom, will these risks be managed over the lifetime of the development?

5.3.10 Flood risk assessment credentials

a. Who has undertaken the flood risk assessment?
b. When was the flood risk assessment completed?

5.4 Other considerations

Managing Surface Water

The site-specific flood risk assessment will need to show how surface water runoff generated by the developed site will be managed. In some cases it may be advisable to detail the surface water management for the proposed development in a separate drainage strategy or plan.You may like to discuss this approach with the lead local flood authority. Surface water drainage elements of major planning applications (eg of 10 or more homes) are reviewed by the lead local flood authority for the area. As a result, there may be specific issues or local policies, for example the Local Flood Risk Management Strategy or Surface Water Management Plan, that will need to

be considered when assessing and managing surface water matters. It is advisable to contact the appropriate lead local flood authority prior to completing the surface water drainage section of the flood risk assessment, to ensure that the relevant matters are covered in sufficient detail.

6.0 Warrington New Town Documents

6.1 Following a request to the Cheshire Record Office for Peel Hall documentation we have now received over 250 pages and a number of drawings relating to the site. The documents generally cover the period from the inception of the Peel Hall Action Area Team in 1976 through to the compilation of the Peel Hall tender list in November 1982.

6.2 The documents record that the first meeting of the team took place on 25th June 1976 and that meetings continued for almost four years before a Planning Statement in respect of the Peel Hall site was submitted for approval in April 1980 under Section 6(1) of the New Towns Act 1965.

6.3 Throughout this period the documents confirm that there were a considerable number of discussions relating to drainage matters at the site. Our appraisal below refers to three team meetings in particular which highlighted a number of major drainage issues encountered across the site which the team could not resolve. These issues, combined with other major concerns around mining beneath the site are what ultimately led to the Peel Hall residential development being substantially reduced in scale.

6.4 Minutes of the 3rd Team Meeting - 6th September 1976
Paragraph 3.2 Drainage

H Phillipson,

(i) indicated from a drawing the limit of the area (east of Ridley Plantation) which could be drained by gravity to Cinnamon Brow drainage system. The area amounts almost to the residential area requirement in the DAP brief.

(ii) said that there did not seem to be any spare capacity in other existing drainage system (Orford) to cater for PA5 [Peel Hall 5] area west of Radley Plantation. Both foul and surface water would have to be pumped into CB [Cinnamon Brow] drainage for substantial residential development west of Radley Plantation.

(iii) explained the proposal of routing main drainage to the south of the Action Area because the effects due to mining are likely to be less here than in the north. The team discussed the physical and financial aspects of the proposals which would be considered further in view of Action Area plan options.

6.5 Minutes of the 9th Team Meeting - 7th February 1977
Paragraph 3.0 Drainage

3.1 with reference to drawing number HG 87/300, A McIntyre;

3.1.1 indicated extent of the area that could be drained by gravity west of the proposed surface water sewer. He would send a copy of the drawing, showing approximate invert levels of the proposed sewer to B.Kar. To K.Pimm's query, he agreed that the watershed line would need to be updated in view of latest mining situation.

3.1.2 said that in order to increase the amount of developable land an area(shown yellow) had been identified where pumping of surface water would be required. D. McNicholl suggested that in view of suspect ground conditions in the area if an alternative area could be identified near Peel Hall. A. McIntyre to look into this together with costs involved. It was also suggested that the developable land area could be increased by raising, wherever feasible, existing ground level west of the proposed sewer by up to perhaps a metre.

3.1.3 reported on the preliminary investigations carried out regarding alternatives suggested at the last team meeting for drainage of surface water for the area west of the watershed line:

(i) regarding improvements to existing drainage systems to carry extra flows there was no spare capacity in Spa Brook. The only possibility, for a gravity system, could be the spare capacity of about 10 ha of developable land, or 20 ha of playing fields, in Dallam Brook but a new outfall sewer from the proposed developments (housing and playing fields) would be required as improvements to existing culvert to take additional run offs did not seem possible.

(ii) use of balancing reservoir/dry lake would mean construction of a dam at the south west corner (north of Greenwood Crescent) of the Action Area but safety factors, particularly for storm and flash run-offs which cannot be predicted accurately, and also land take aspects, make it a less favoured alternative.

(iii) pumping of surface water into Padgate Brook would require additional pump capacity to cater for storm and flash run-offs which would mean excessive costs and the risk of flooding in the event of a breakdown In the pumping system.

3.1.4 said that further investigations, together with costs involved would be made for above alternatives.

6.6 Minutes of the 11th Team Meeting - 4th April 1977
Paragraph 3.0 Drainage - Current Situation

3.1 A. McIntyre brought the team members up to date with the latest situation on surface water drainage of the western area. He had earlier sent a note to E.P. Jones regarding this and copies of the note are to be circulated to team members. Briefly the latest situation is:

(i))that any increase in the current catchment of Mill Brook will exacerbate the flooding situation, due to high tides and adverse winds on the Mersey, in the Sankey/ Mill Brook area. This means that alternatives ii/a and iii/a suggested at the previous team meeting were no longer feasible.

(ii) the only other alternative would be pumping of the surface water into the Cinnamon Brow drainage system, but, because of excessive costs and likely breakdowns in the pumping system, this solution was not recommended.

(iii) in view of the above any development at all in the western part of PH [Peel Hall] did not seem possible and the area would have to remain under present, or a similar use which ruled out district park provision.

3.2 E.P. Jones said that the above presented a situation which was worse than had been envisaged before and this would have three obvious implications:

(i)departure from the Outline Plan proposals which had shown the area allocated for a district park.

(ii) review of District Park provision in the Padgate District and

(iii) alternate use/uses to which the said area could be assigned. In the case of (iii) the team members, after a lengthy discussion, agreed that the situation would have to be looked into carefully to seek a positive way of dealing with the area; to leave it in its present (agricultural) use could involve problems since the area will be subjected to great pressure from existing and future developments. A. McIntyre stated that, from run off point of view, uses like golf course, parkland would not constitute a 'similar' use but grazing land, urban farm, tree nursery, tree planting or allotments would.

6.7 Further to the series of team meetings which we refer to above a Planning Statement in respect of the Peel Hall site was eventually submitted for approval in April 1980 under Section 6(1) of the New Towns Act 1965. The Planning Statement covered all aspects of the site appraisal which had been carried out by the Peel Hall Action Area Team over the previous four years and the following extract clearly demonstrates how the development proposals were significantly scaled down over that period:

2.0 Context

2.2 Although the proposals are also compatible with the Padgate District Area Plan, considerably less development is proposed now than envisaged in the DAP. The DAP envisaged a District Park and Linear Open Space of some 48 ha and a residential development of some 900 private and rented dwellings. In view, however, of mining, drainage and financial constraints the Submission proposals relate to the development of some 175 private dwellings and approximately 10.21 ha of open space. The remaining area will continue to be farmed.

6.8 Further to the above the following extract from the Planning Statement provides a clear and concise summary of the proposals for surface and foul water drainage for the Peel Hall site:

5.0 Engineering Services

5.2 Surface water drainage
Surface water drainage of the area is a present dependent upon natural features with the catchment draining southwards towards Spa Brook in the south-west and Black Brook in the south-east. Spa Brook has no spare capacity for any increase in flow.

5.3 Proposed surface water drainage from site A will be through the adjacent CB 20 housing site into Mill Brook/Black Brook and from site B southwards into Black Brook.

5.4 Foul Water Drainage
A foul sewer exists alongside Blackbrook Avenue up to the location of the proposed petrol filling station and continues in a north-easterly direction alongside Black Brook/ Mill Brook. There is no foul sewer system serving Houghton Green Village. The foul sewer system in the Warrington Borough Council Development to the south of the area has no spare capacity.

5.5 Foul sewerage for site A will be provided through the adjacent CB20 housing site to connect with the existing sewer alongside Mill Brook. An outfall connection has been provided at the southeastern corner of the site.

6.9 The three sets of minutes and the Planning Statement referred to above are referred to collectively as Appendix C. This appendix has not been included in the body of this report, but instead it has been sent as a core document in pdf format with the title 'Appendices A,B and C'.

7.0 Discussion

7.1 The guidelines for the preparation of a site-specific flood risk assessment set out in Paragraph 5.2 above state that *'the information provided in the flood risk assessment should be credible and fit for purpose*'. The guidelines also say that *'a flood risk assessment should also be appropriate to the scale, nature and location of the development.'*

7.2 Having now completed our review we don't believe that either of the above statements can be applied to the appellant's current FRA when viewed alongside the site specific FRA checklist set out in Paragraph 5.3 above.

7.3 Firstly we would like to draw attention to the quality and content of the appellant's FRA itself. This document consists of just nine pages of text supported by five appendices. The text appears to be virtually the same as that contained in the appellant's original FRA from 2016 save for a number of additional paragraphs relating to a Water Framework Directive (WFD). The five appendices are exactly the same as those contained in the original 2016 FRA and they have simply been copied across from that report.

7.4 We have highlighted in Section 4 of this review that both the text and the appendices of the appellant's current FRA contain a substantial number of errors of a general nature including omissions, incorrect statements and out of date references.

7.5 It is also the case that the current FRA generally offers very little if any explanation in relation to much of the content of the appendices attached to the main document. In particular we would highlight foul and surface water run-off calculations with no supporting documentation and flood maps which have simply been abstracted from the EA website and attached to the main document, again without comment. There is also some evidence of a CCTV survey having been carried out at the western end of the site, but again there is no explanation as to why this was undertaken or what results were achieved.

7.6 The appendices also contain selected pages taken from two separate reports dated 2011 which appear to have been included in support of the current FRA. Once again however there is no clear explanation as to what their relevance is or why only a few pages of each document have been included in the appendices.

7.7 Finally on this issue we are concerned that the appellant continues to rely upon a document that was originally prepared over four years ago and has

remained virtually unchanged ever since. This is despite the fact that advice, procedures and legislation in respect of the appellant's proposals has continued to evolve to this day. In that respect Paragraph 4.2.1 of Warrington Borough Council's Local Flood Risk Management Strategy 2017-2023 highlights a number of documents that will inform the Local Planning Framework in relation to flood risk, as follows:

• Warrington Surface Water Management Plan (SWMP) 2012;
• Mersey Estuary Catchment Management Plan (CFMP) 2009;
• Strategic Flood Risk Assessment Level 2 (SFRA Level 2);
• Mid Mersey Water Cycle Strategy Study 2011;
• National Planning Policy Framework (NPPF) 2012.

7.8 It is noted that the appellant only refers to one of the above documents in support of his FRA, namely the SFRA Level 2 Assessment, and even then he has only included seven pages of this document in his submission.

7.9 Turning to the Peel Hall site itself then Section 4 of this review highlights a number of major issues in relation to the site and the surrounding catchments which simply haven't been addressed in the appellant's current FRA. These issues include:

- the ability or otherwise of the Spa Brook and other field ditches to discharge surface water run-off from the site
- the source of the Spa Brook upstream and the potential for flooding should local groundwater abstractions eventually cease
- the potential for flooding via the use of a long and fixed diameter existing culvert to discharge surface water at the downstream end of the site
- the potential for flooding across the site from existing groundwater discharge
- the location of two critical drainage areas immediately downstream from the site and the potential to cause additional flooding in these locations

7.10 In addition we note that the email from Mark Thewsey of the EA which we refer to in Section 4 of this review states that the Peel Hall site *'is generally a low lying parcel of land falling from a mounded ridge circa 17m AOD in the area of your 'Phase 1' down to about 10m AOD at the southern end where Spa Brook passes under Poplars Avenue.'*

7.11 We are aware from the site plans that the southern end of the site near to Poplars Avenue is the proposed location of the local centre which includes a new care home. The guidelines for the preparation of a site-specific flood risk assessment set out above in Paragraph 5.3.7 *'Occupants and users of the development'* state that *'where appropriate, are you able to demonstrate how*

the occupants and users that may be more vulnerable to the impact of flooding (eg residents who will sleep in the building; people with health or mobility issues etc) will be located primarily in the parts of the building and site that are at lowest risk of flooding? If not, are there any overriding reasons why this approach is not being followed?'

7.12 Clearly the proposal to locate the care home in what is considered to be the lowest part of the Peel Hall site and adjacent to the Spa Brook goes very much against these guidelines. Hence we believe that this decision not only makes the care home more vulnerable to any future flooding in the area but also places the safety of its residents at greater risk.

7.13 Finally and perhaps most importantly we would point to the fact that the appellant's FRA makes no reference as to how flood risk at the site will be affected by climate change. Section 3.5.2 '*The impacts of climate change*' set out in Warrington Borough Council's Local Flood Risk Management Strategy 2017-2023 states that:
'Over the past century around the UK sea level rises have occurred and more of our winter rain falls in intense wet spells. Seasonal rainfall is highly variable. It seems to have decreased in summer and increased in winter, although winter amounts changed little in the last 50 years. Some of the changes might reflect natural variation; however the broad trends are in line with projections from climate models.
Greenhouse gas (GHG) levels in the atmosphere are likely to cause higher winter rainfall in future. Past GHG emissions mean some climate change is inevitable in the next 20-30 years.
Lower emissions could reduce the amount of climate change further into the future, but changes are still projected at least as far ahead as the 2080's. There is enough confidence in large scale climate models to say that Warrington Borough Council and the UK must plan for change.'

7.14 Flood events in 2019 and 2020 have made this a more prominent issue within the planning system and there have been policy changes. Climate change will make the situation more critical.

7.15 The UK has suffered over 20 major storm events over the past four years and February 2020 was the wettest on record in the UK. The development site is low lying and marshy and further urbanisation and increased run-off rates will lead to flooding on existing local roads and housing areas as well as the proposed development. Existing watercourses and ditches that the appellant proposes to utilise for the disposal of surface water connect to areas downstream that remain prone to flooding despite past flood alleviation works.

7.16 The appellant's FRA was carried out before the latest research from the Met Office on changed rainfall patterns was available and the report requires updating to look at how changed rainfall patterns due to climate change will impact on the two small brooks which he proposes to utilise to drain the development.

7.17 The UK weather is changing or has changed and the design rainfall event that needs to be accounted for also needs to change. The traditional use of historical records and the statistically derived data (often called Monte Carlo Modelling simulation) used to derive flows and flood levels cannot now be relied upon as the statistics of extreme rainfall and hence pluvial and fluvial flooding have changed.

7.18 The National Flood Resilience Review published by the UK Government in September 2016 was the first publication to identify that a new approach was necessary, but the original FRA report does not appear to have included an 'uplift' in rainfall levels. The climate emergency means many catchments routinely experience a 1:100-year flood every year making accounting for climate change imperative.

7.19 The FRA and the impact of the site on the local stream network needs to be reassessed against the most recent and relevant climate data available from the Met Office. This includes an assessment of the likelihood of groundwater flooding and the role played by watercourses bordering and running through the site.

7.20 Given the size of the proposed Peel Hall development and the scope and extent of the drainage issues that are all too apparent across the site then it is our contention that the information provided to date is not appropriate to the scale, nature and location of the development. As such we don't believe that the appellant's current FRA and appendices are credible and fit for purpose.

7.21 On the question of Warrington New Town's earlier development of the site then we believe that the information we recently received from the Cheshire Record Office clearly demonstrates the drainage problems that the site continues to pose. What started out as a major scheme to construct 900 residential properties for purchase and rental ended up as a much smaller project of some 175 houses which we see today on Ballater Drive.

7.22 As we know the appellant's current proposals are centred upon the use of Spa Brook to discharge surface water from the site. However as early as 1977 the Peel Hall Action Area Team dismissed the idea of using the Spa

Brook on the basis that *'Spa Brook has no spare capacity for any increase in flow.'*

7.23 What followed was a lengthy review undertaken by the Action Area Team to find a solution to the drainage problems across the site which we have detailed in Section 6.

7.24 Eventually the Team concluded that there was no clear way ahead with respect to the site drainage and it was decided that the bulk of the site should remain as farmland. This decision removed over 700 programmed properties from the very same land where the appellant is now proposing to build 1200 additional properties.

7.25 Hence we believe that this is another very clear example of why the appellant's FRA in respect of the Peel Hall development is neither credible nor fit for purpose.

8.0 Closing Statement

The appellant's FRA has failed to demonstrate that the Peel Hall site can be adequately drained as part of the current planning application.

Vital issues such as the potential for the Spa Brook to flood should groundwater abstractions eventually cease have simply not been addressed, despite the fact that the appellant's representative was provided with this information in 2012.

Further, the unsubstantiated statements in the FRA regarding the use of the Spa Brook culvert as an outfall sewer for the proposed development are deeply concerning given that Warrington New Town concluded that Spa Brook has no spare capacity for any increase in flow. The FRA also fails to address flooding issues that might arise downstream of the Peel Hall site in areas already at risk from regular flood events.

There are many hundreds of residents who live in close proximity to the site whose properties might be put at greater risk of flooding as a result of the proposed development. Their welfare is paramount when it comes to making decisions about the Peel Hall site and yet their concerns have been completely ignored by the appellant's FRA.

For all of these reasons we don't believe that the current planning application provides sufficient evidence that the hydrology, drainage and flood risk at the Peel Hall site has been adequately assessed by the appellant.

Accordingly the Rule 6 group believes that appellant's FRA should be rejected as a formal submission and that the appeal against refusal to allow the Peel Hall site to be developed should again be turned down.

Peel Hall

Application No. 2016/28492

Hydrology, Drainage and Flood Risk Assessment

Proof of Evidence Appendices

Appendix A - Environment Agency E-Mail

Appendix B - Densham Avenue Flood Alleviation Works

Appendix C - Warrington New Town Documents

Produced by David Sawyer
for the Peel Hall Rule 6 Party

SAVE PEEL HALL
TOO LATE WHEN IT'S GONE

Appendix A - Environment Agency E-Mail

Halford, Alex

From: Thewsey, Mark [mark.thewsey@environment-agency.gov.uk]
Sent: 17 January 2012 16:10
To: Halford, Alex
Subject: RE: 120109/NV08 - Peel Hall Farm, Warrington

Dear Alex,
Following on from your query this morning about soakaway drainage prospects in the vicinity of Peel Hall Farm Housing development at north Warrington:

Thank you for the location plan. It confirmed that it was indeed the development area I thought you were talking about, and therefore worthy of a word of warning about the expected ground conditions.

As indicated on the telephone, this is a generally low lying parcel of land falling from a mounded ridge circa 17m AOD in the area of your 'Phase 1' down to about 10m AOD at the southern end where Spa Brook passes under Poplars Avenue.

The superficial deposits here are generally very thin with surface sands above sandstone bedrock, with a laterally extensive but thin layer of intervening clay.
Off site, this clay thickens significantly to the south.

To the north of the Motorway at a place called Spa Well, (Marked on OS maps) there used to rise a substantial spring which formed the commencement of Spa Well Brook that then flowed SW, and across your wider site area before passing under Poplars Ave and onward to ultimately join Sankey Brook.
This spring effectively stopped discharging during development of water gathering tunnels beneath for a public supply well extension in 1878, and thereafter the brook had very little dry weather flow in its head-waters. The watercourse from Spa Well to the present M62 thereafter became little more than an agricultural ditch.

Many decades after this artificial diminution in Spa Well flow took place, Spa Brook downstream of your site was incorporated into a culvert/piped drainage system beneath the expanding housing area of Hulme.

Historically, (since construction of the first of the bug public supply abstraction wells about 1868) local groundwater levels at/near you site have been controlled, usually well below surface, by the substantial public water supply abstractions made from the underlying sandstone.

From the mid 1990s, for operational reasons, there was a prolonged period of non- abstraction by the local groundwater pumping stations, allowing water levels to return to their historical 'natural' levels before abstraction re-commenced on a smaller scale than before in 2008-9.

While thepumping stations were off, local groundwater levels quickly rose to surface in the low lying area to the North of the motorway, where the sandstone is either exposed or generally covered only by a thin veneer of sand. This gave rise to significant groundwater flooding in that area, probably made worse by the land having been also slightly lowered by mining in the 1960s to 1980s.

To the south of the motorway, despite the land being similar or even slightly lower along Spa Brook, this groundwater flooding problem did not seem to prevail to the same extent, or at least not so as to cause such an obvious problem. Upon investigation by desk study, it would seem that this lesser groundwater flooding problem was probably on account of a layer of clay developed here between the underlying sandstone and the thin sandy soils at surface. This clay, although very thin, appears to have served as an intervening aquitard suppressing a probably small artesian head of groundwater beneath it.

'Field drainage' of the superficial sand above this clay layer was probably helped by the presence of a few former agricultural land drains or ditches remaining in the fields that comprise your wider site.

At the time of the persistent high groundwater levels (Mid 1990s through to circa late 2000s when the local abstractions finally resumed) it struck me that any development perforating this thin clay mantle just below the surface, might initiate a significant outflow of water to surface from the underlying sandstone.
As such I would suggest that development, or even site investigations that perforates this layer might cause a problem in the future if it is left unsealed.

This would not only cause a risk of groundwater discharge and flooding on site, but may perhaps exacerbate any limitations in the capacity of the now culverted Spa Brook downstream. (NB I do not know if there are any such limitations, but I am mindful that when the culvert was built, the flow would have been much less than historical norm, and of course the catchment has since been largely built over with substantial paved areas.)

At present, the local groundwater abstractions are active again, but on a much smaller scale than in the past. There is no guarantee that they would always keep operating, and there is certainly no obligation upon them to do so.

As such, it seems only fair to warn you of the potential drainage difficulties or risks that may prevail on this site - especially in the lower lying areas where the potential for groundwater discharge is greatest, especially if the excavations should pierce the thin clay layer.

Fortunately the superficial deposits across this site are already well characterised by many logs drilled in the late 1970s (Available from British Geological Survey) but it is important to be aware that any water level details on those logs will not be representative of the much higher levels that were achieved between 1996 and 2008 ... and which may be achieved again from time to time in the future.

I should also point out that the higher ground in the vicinity of your Phase 1 area probably makes that part of the site relatively immune to this problem, which is probably the best of the good news that I can offer.

As far as soakaway prospects are concerned: Beware misleadingly favourable groundwater levels in site investigations done either before 1996 or since 2008 up to the present.
If you have groundwater level data obtained circa 1997 to 2007, then that is probably reasonably representative of the high 'natural' groundwater levels.

Soakaway drainage from roads etc should be collected through trapped gullies to percolating granular infiltration in the unsaturated soil zone, and not discharged directly into deeper soakaways that may by-pass some or all of the unsaturated zone or the attenuating properties of the soils. The amount of unsaturated zone necessary to prevent a soakaway 'drowning out' will depend upon a combination of the ground soakage properties, and how much soakage you are trying to achieve in a given area. Solutions may present in the form of detention capacity between collection and percolating soakaway, or by increasing the soakage area if availability of land allows. In this locality, drainage towards low ground is more likely to run up against problems of drowning out,

IN SUMMARY:
The low lying parts of the site may be vulnerable to a very high water table or even groundwater flooding, and may therefore be unsuitable for soakage.

If any attempts are made to excavate deep soakaways in the lower lying parts of the site, which is a practice that the EA normally resists anyway for anything other than clean, non-industrial roof-water soakaways, (because of the risk of direct discharge of pollutants such as fuels, herbicides, pesticides, and de-icing agents etc) then there may be a significant risk that from time to time these would be prone to drown out or even cause artesian discharge, which may result as a result of 'Groundwater Flooding' events when local abstractions stop.

Groundwater levels in the underlying sandstone aquifer of this locality are naturally inclined to be circa 10m to 13.5 mAOD or thereabouts, although they are often suppressed by artificial abstraction activity.
It is suggested that any site investigation groundwater level data should be read in the context of where it fits in with these potentially significant changes over time.

I hope this information proves helpful, and saves the development from the possibility of considerable expense or inconvenience in the future.

Yours Sincerely,
M Thewsey
Technical Officer (Groundwater)
NW Environment Agency
Tel 01925, 543394

2012, 20610

From: Halford, Alex [mailto:alex.halford@tpa.uk.com]
Sent: 17 January 2012 09:52
To: Thewsey, Mark
Subject: Ref: 120109/NV08 - Peel Hall Farm, Warrington

Appendix B - Densham Avenue Flood Alleviation Works

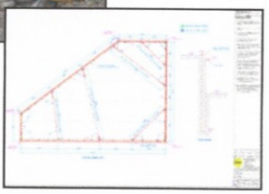
Case Studies

DWM Civil Engineering

Densham Avenue Flood Alleviation Scheme

About the project

DWM Plant Limited were employed by Harry Fairclough to undertake works on a logistically challenged scheme for Warrington borough council. Sever flooding on a residential estate required urgent attention to prevent a reoccurrence of previous floods from 2008. A scheme was designed to provide attenuation for storm water during period of heavy rainfall.



Our service

Due to the design and build nature of the contract and with input from Sheet Pile Solutions Ltd, at conception stage, several options were considered, ranging from permanent sheet piled structure, RFC storage tank, and segmental shafts, however the scheme to be adopted was a 2.8m diameter Tubosider tank system. During the evaluation process of the tender consideration about the logistical aspects had to be considered predominantly the single access to the site through a 3.0m wide access, this would mean that all deliveries of plant and temporary works equipment, excavated material to be disposed of and suitable backfill material to be imported, all within a residential estate.

Due to the ground conditions consisting of medium dense sands, and a high water table 1.0m below ground level. A robust temporary works solutions would be required, this consisted of 9.0m long L604 sheet piles (250No) and a 406*406 heavy duty bracing system, attention had to be made in choice of piling equipment given to close proximity of residential houses, DWM Plant Ltd used a RTG RG16 telescopic leader rig c/w variable moment vibratory hammer to install the piles without disruption to the local resi-

About Us

Our company has been formed to provide a single point of contact for a full range of services in association with below ground construction. Trading as DWM Plant Limited, we offer nationwide coverage from our operating base in Manchester. DWM Plant Limited has over 15 years' experience and trading history in the construction industry, from its origins in plant hire and pipeline construction to more recent contracts including groundwork and external works packages.

If you have any questions about this case study or would like to discuss your own proposal, please contact us via the details below.

E: info@dwmplantltd.co.uk T: 0161 707 9789 W: http://www.dwmplantltd.co.uk

Appendix C - Warrington New Town Documents

B. LANGFORD
SCAO
20624

PEEL HALL ACTION AREA PLAN - PA5

Minutes of the 3rd Team Meeting held at 2:00 P.M., on Monday, 6 September 1976 in Room 261, New Town House.

PRESENT:	E. P. Jones (Convener)	Planning
	B. Kar	Planning
	M. Burgess	Estates
	P. Goulder	Landscape
	H. Phillipson	Engineers
	P. Lloyd	Finance
APOLOGIES:	K. Pimm	Architects
	P. Hodgson	Social Development

ACTION

1.0 MINUTES OF THE LAST TEAM MEETING

Confirmed.

2.0 MATTERS ARISING

2.1 Work Programme and DCB.

2.1.1 Copies of the revised Work Programme and Brief from the DAP Team were circulated to team members and the following corrections in the programme were noted:

Draft Board Report to DCOC	-	10 February 1977	
COC	-	7 March 1977	All
Report to Board	-	29 March 1977	
Formal S6(1) Submission	-	July 1977	

2.1.2 Appendix 'D' in the Brief will be circulated separately. — EPJ/BK

2.1.3 DCB to be prepared on the basis of the Work Programme covering 1st team meeting to S6(1) Board Submission period. Draft DCB to be circulated to team members by the end of the week and the final one to be presented to DCOC on 26 September for approval. — All EPJ

Inputs re Urban Design aspects will be covered within CAPO's Department. — EPJ

3.0 SPECIAL STUDIES

3.1 Mining

H. Phillipson explained the various aspects on the likely patterns and phasing of mining operations. He would be circulating a Team Note on this. B. Kar to supply a copy of the 1:5000 base map of the Action Area. HP BK

3.2 Drainage

H. Phillipson,

(i) indicated from a drawing the limit of the area (east of Radley Plantation) which could be drained by gravity to Cinnamon Brow drainage system. The area amounts almost to the residential area requirement in the DAP brief.

(ii) said that there did not seem to be any spare capacity in other existing drainage system (Orford) to cater for PA5 area west of Radley Plantation. Both foul and surface water would have to be pumped into CB drainage for substantial residential development west of Radley Plantation.

(iii) explained the proposal of routing main drainage to the south of the Action Area because the effects due to mining are likely to be less here than in the north. The team discussed the physical and financial aspects of the proposals which would be considered further in view of Action Area Plan development options. HP/ BK/ PL

3.3 Ground Conditions

H. Phillipson said that a report, along with drawings would be available soon. HP

3.4 Landscape Appraisal

P. Goulder said that this would be available by the end of the week. B. Kar to prepare a note requesting information on the actual facilities to be provided and the final formal/informal split in the District Park from I. Parkin. 'District Park' to be included as Item 3.7 under 3.0 (Special Studies) in the Work Programme Check List. PG

3.5 Land Ownership

M. Burgess tabled drawing showing details of land ownership and schedules on acquisition costs and tenancies. Copies of these to be made available to P. Lloyd and B. Kar. MB

PEEL HALL ACTION AREA PLAN - PA5

Minutes of the 9th Team Meeting held at 2:00 P.M., on Monday, 7 February 1977 in Room 160, New Town House.

PRESENT:	E. P. Jones (Convener)	Planning
	B. Kar	Planning
	K. Pimm	Architects
	D. McNicholl	Engineers
	A. McIntyre (Item 3.0)	Engineers
	P. Lloyd	Finance
	P. Goulder	Landscape
	G. Dickenson	Social Development
	M. Burgess (part)	Estates

ACTION

1.0 MINUTES OF THE LAST TEAM MEETING

Confirmed.

2.0 MATTERS ARISING

2.1 DCB

E. P. Jones informed the team that the DCB for Engineering inputs (February to July 1977) had been received and total expenditure to end of December 1976 amounted to 22%.

3.0 DRAINAGE

3.1 With reference to Drawing No. HG87/300, A.McIntyre;

3.1.1 indicated extent of the area that could be drained by gravity west of the proposed surface water sewer. He would send a copy of the drawing, showing approximate invert levels of the proposed sewer, to B. Kar. — AM/DM

To K. Pimm's query, he agreed that the water shed line would need to be updated in view of latest mining situation. — AM/DM

3.1.2 said that in order to increase the amount of developable land an area (shown yellow) had been identified where pumping of surface water would be required. D. McNicholl suggested that in view of suspect ground conditions in the area if an alternate area could be identified near Peel Hall. A.McIntyre to look into this together with costs involved. — AM/DM

It was also suggested that the developable area could be increased by raising, wherever feasible, existing ground level west of the proposed sewer by up to perhaps a metre. — KP/BK

3.1.3 reported on the preliminary investigations carried out regarding alternatives suggested at the last team meeting for drainage of surface water for the area west of the water shed line:

(i) regarding improvements to existing drainage systems to carry extra flows there was no spare capacity in Spa Brook. The only possibility, for a gravity system, could be the spare capacity of about 10 ha of developable land, or 20 ha of playing fields, in Dallam Brook but a new outfall sewer from the proposed developments (housing and playing fields) would be required as improvements to existing culvert to take additional run offs did not seem possible.

(ii) use of balancing reservoir/ dry lake would mean construction of a dam at the south-west corner (north of Greenwood Crescent) of the Action Area but safety factors, particularly for storm and flash run offs, which cannot be predicted accurately, and also land-take aspects, make it a less favoured alternative.

(iii) pumping of surface water into Padgate Brook would require additional pump capacity to cater for storm and flash run offs which would mean excessive costs and the risk of flooding in the event of a breakdown in the pumping system.

3.1.4 said that further investigations, together with costs involved would be made for above alternatives. AM/ DM

3.2 A. McIntyre suggested that since pumping of foul water from the proposed pavillion (and possible housing) west of the water shed line would be necessary, it would be desirable to locate these elements as near as possible to the proposed foul sewer. D. McNicholl suggested that the relatively small amount of surface water from the proposed pavillion could be combined with foul water drainage. AM/ DM/ PG/ BK

3.3 P. Goulder undertook to look into the possibilities, including cost implications, of providing a pervious base, like a sand/cinder bed to proposed pitches in order to control run offs. PG

3.4 With reference to AAP Work Programme, E. P. Jones said that in view of drainage problems, which had proved more complicated to resolve than had initially been

2062

11

PEEL HALL ACTION AREA PLAN - PA5

Minutes of the 11th Team Meeting held from 2.00 pm to 4.30 pm, on Monday 4th April 1977 in Room G151 New Town House.

PRESENT:	E P Jones (Convener)	Planning
	B Kar	Planning
	D McNicholl	Engineers
	A McIntyre	Engineers
	R Maxwell (for P Lloyd)	Finance
	P Goulder	Landscape
	G Dickenson	Social Development
APOLOGIES:	K A L Pimm	Architects
	M Burgess	Estates

ACTION

1.0 MINUTES OF THE LAST TEAM MEETING

1.1 Confirmed — ALL

2.0 MATTERS ARISING

2.1 E. P. Jones reported that 34% of the total budget had been spent upto the end of February 1977. This indicated an underspending - by all departments - by about 16% — ALL

3.0 DRAINAGE - CURRENT SITUATION

3.1 A. McIntyre brought the team members up to date with the latest situation on surface water drainage of the western area. He had earlier sent a noteto E. P. Jones regarding this and copies of the note are to be circulated to team members. Briefly, the latest situation is: — AM/BK

(i) that any increase in the current catchment of Mill Brook will exacerbate the flooding situation, due to high tides and adverse winds on the Mersey, in the Sankey/Mill Brook area. This means that alternatives ii/a and iii/a suggested at the previous team meeting were no longer feasible.

(ii) The only other alternative would be pumping of the surface water into the Cinnamon Brow drainage system, but, because of excessive costs and likely breakdowns in the pumping system, this solution was not recommended.

(iii) In view of the above any development at all in the western part of PH did not seem possible and the area would have to remain under present, or a similar use which ruled out district park provision. — ALL

3.2 E. P. Jones said that the above presented a situation which was worst than had been envisaged before and this would have three obvious implications:

i, departure from the Outline Plan proposals which had shown the area allocated for a District Park,

ii, review of District Park provision in the Padgate District and(iii) alternate use/uses to which the said area could be assigned. In the case of (iii), the team members, after a lengthy discussion, agreed that the situation would have to be looked into carefully to seek a positive way of dealing with the area; to leave it in its present (agricultural) use could involve problems since the area will be subjected to great pressure from existing and future developments. A. McIntyre stated that, from run-off point of view, uses like golf course, parkland would not constitute a "similar" use but grazing land, urban farm, tree nursery, tree planting or allotments would. ALL ALL

4.0 NAZ HOUSING

4.1 A. McIntyre reported that C.C.C. had not yet confirmed the change in the estimated (1973) traffic volumes on M62. DM/AM

4.2 In BKar's query A. McIntyre said that in view of new volumes the NAZ would not necessarily be reduced uniformly by 15m. A proper contour would be located after confirmation of the new volumes by C.C.C. BK

5.0 DEVELOPABLE LAND - OPTIONS

5.1 Development of the eastern part of the Action Area did not pose any problems so far as drainage was concerned. It was agreed by the team members that the area shown yellow (unhatched) on drawing HGS1/300 should be excluded in view of complicated drainage proposals. ALL

5.2 The team members discussed whether whole or part of the eastern part of the Action Area should be developed to achieve a maximum return on the infrastructure provision that would already be available to open up the Action Area - i.e. the DDR and main drainage - and it was agreed that the following options need to be appraised financially: RM/BK

(i) The very minimum area i.e. developing gap sites in Houghton Green Village. These sites could be drained into Houghton Green Village improved drainage system to be undertaken by WBC.

(ii) Developing areas as in (i) plus about 10 to 12ha of land to accommodate 350 dwellings. This would involve the very minimum road length from the DDR roundabout and drainage would be linked to Phase II CB drainage.

PLANNING STATEMENT

1.0 INTRODUCTION

1.1 The Development Corporation proposes the development of some 18.93 ha of land in the Padgate District, principally for residential development and open space uses. The area, referenced PA5.1, lies within the Parishes of Winwick and Poulton-with-Fearnhead.

1.2 The development of Cinnamon Brow immediately to the east mainly for houses for sale is progressing rapidly. Approval of these proposals is urgently required in order to sustain the highly successful marketing of private housing in this part of the New Town. The development is considered to be physically and economically attractive as it represents a "rounding off" of Cinnamon Brow and utilises infrastructure already built.

2.0 CONTEXT

2.1 The proposals are compatible with the WNTDC's Outline Plan which was accepted, with certain minor modifications, by the Secretary of State for the Environment on 25 June 1973. None of the modifications apply to the submission area.

2.2 Although the proposals are also compatible with the Padgate District Area Plan, considerably less development is proposed now than envisaged in the DAP. The DAP envisaged a District Park and Linear Open Space of some 48 ha and a residential development of some 900 private and rented dwellings. In view, however, of mining, drainage and financial constraints the Submission proposals relate to the development of some 175 private dwellings and approximately 10.21 ha of open space. The remaining area will continue to be farmed.

4.8 Footpaths

Main and secondary footpaths outside the new residential areas will link the proposed development to Cinnamon Brow, Houghton Green Village and the WBC housing to the south.

4.9 Public Transport

Buses serve the nearby areas of Cinnamon Brow, Houghton Green Village and WBC housing areas. It may be possible to extend a service into Peel Hall.

4.10 Buffer Zone

A buffer zone of 10 m (average) width is proposed outside the limits of the western verge to Blackbrook Avenue (DDR) to be incorporated in a comprehensive landscape scheme for the DDR.

5.0 ENGINEERING SERVICES

5.1 Public Utilities

Public utilities will be available when required.

5.2 Surface Water Drainage

The surface water drainage of the area is at present dependent upon natural features with the catchment draining southwards to Spa Brook in the south-west and Black Brook in the south-east. Spa Brook has no spare capacity for any increase in flow.

5.3 Proposed surface water drainage from site 'A' will be through the adjacent CB20 housing site into Mill Brook/Black Brook and from site 'B' southwards into Black Brook.

5.4 Foul Water Drainage

A foul sewer exists alongside Blackbrook Avenue up to the location of the proposed petrol

filling station and continues in a north-easterly direction alongside Black Brook/Mill Brook. There is no foul sewer system serving Houghton Green Village. The foul sewer system in the Warrington Borough Council development to the south of the area has no spare capacity.

5.5 Foul sewerage for site 'A' will be provided through the adjacent CB20 housing site to connect with the existing sewer alongside Mill Brook. An outfall connection has been provided for site 'B' at the southeastern corner of the site.

6.0 PHASING

6.1 The development of infrastructure and housing should take place within the 'mining window' which is currently seen as extending to the Financial Year 1984/1985. The current Private Housing Programme envisages house construction from May 1981.

6.2 Open space implementation, which is less sensitive to mining constraints, is phased over 4 years starting in 1981/1982. Initial works will be mainly concentrated to the south.

7.0 CONSULTATIONS

7.1 The following bodies and organisations have been consulted informally:

Cheshire County Council
Warrington Borough Council
Winwick Parish Council
Poulton-with-Fearnhead Parish Council
Public Utilities Undertakers
Public Transport Authorities
National Coal Board
North West Water Authority
Department of the Environment
- New Towns Division
- Regional Controller, Highways & Transportation