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## REPORT ON

### PAVEMENT ASSESSMENT SURVEY

ON 1.9 KM SECTION OF THE L6042,  
FROM THE JUNCTION  
WITH THE L2023 SOUTHEASTWARDS TO  
WALSHESTOWN, CO. KILDARE

Submitted to:

Planning Department  
Kildare Co. Council  
Aras Chill Dara  
Devoy Park  
Naas  
Co. Kildare

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October 2009

09 5071 50022

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<i>Document Title</i>	Pavement Assessment Survey On 1.9 km Section of the L6042, from the Junction with the L2023 Southeastwards to Walshestown, Co. Kildare
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<i>Comments</i>	
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<i>Client</i>	Cemex (ROI) Ltd.
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<i>Client Reference</i>	09 5071 50022
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<i>Project Manager Approval</i>	D. Tutty	
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<i>Reviewer</i>	M. Maher	
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<i>Approval Signatory</i>		
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- D. Applied during initial drafting of the report before it has been reviewed.
- C. Applied after the report has been reviewed but before it has been approved by the Project Manager.
- B. Applied after the Project Manager has approved the report ready for issue to the client.
- A. Applied to reports after external/client review.

The version number starts at '0' and is raised by '1' at each re-type.

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## EXECUTIVE SUMMARY

On the instructions of Golder Associates Ireland Limited (Golder), consultants acting on behalf of the Client, Cemex (ROI) Ltd. (Cemex), GeoTesting Ltd (GeoTesting) carried out a pavement assessment survey (PAS) of approximately 1.9 km of the existing pavement along the L6042, extending from the junction with the L2023 and extending to the Cemex property, in Walshestown, Co. Kildare. The PAS was carried out to address Item 31 of the Further information Request issued by Kildare County Council (planning reference 08/2159) dated 25/02/09

Three traffic scenarios were considered based on projected traffic volumes presented in the revised Traffic and Transport Assessment Report prepared by PMCE Ltd (September 2009) for the proposed development by Cemex at Walshestown as summarised in the table below. The cumulative traffic is shown in terms of million standard axles.

**Table 1 Traffic scenarios based on projected traffic volumes (PMCE, 2009)**

Scenario	Description	Cumulative Traffic (msa)
1	Background traffic, i.e. local traffic with no local industrial component	1.03
2	Background traffic, plus truck traffic due to local operations of CPI and Behans	1.74
3	Background traffic, plus truck traffic due to local operations of CPI, Behans and Cemex	2.34

Based on a visual condition survey, the majority of the pavement section had Pavement Condition Index (PCI) values in the 40 to 60 range indicating a predominant Fair to Poor condition overall. The Falling Weight Deflectometer (FWD) of structural capacity survey indicated the minimum overlay requirements for the Scenario 2 condition ranged from 50 to 80 mm. For the Scenario 3 traffic, the minimum overlay requirements increase to 50 to 90 mm.

To upgrade the subject 1.9 km section of the L6042 to sustain the predicted traffic volumes as anticipated in Scenario 3 (i.e. 4.7 msa), the following actions are recommended for each zone:

**Table 2 Recommended actions**

Zone	Chainage ranges	Action required
1	0 to 50	No action required
2	50 to 400	Repair localised distressed areas, as required and overlay with 50mm of Asphalt, comprising 50mm Wearing Course.
3	400 to 850	Repair localised distressed areas, as required and overlay with 90mm of Asphalt, comprising 40mm Wearing Course over 50mm Base Course.
4	850 to 1900	Repair localised distressed areas, as required and overlay with 80mm of Asphalt, comprising 40mm Wearing Course over 40mm Base Course

It is assumed that only one overall overlay strategy will be implemented, i.e. Scenario 3. To implement Scenario 1 or 2 upgrading knowing the projected traffic would not make sense and would not provide a serviceable pavement for the design period. Assuming Scenario 3 upgrading is implemented then Cemex would be responsible for the additional 10mm of overlay required on Zone 3 and for the additional 30mm overlay required on Zone 4.

The survey suggests that approximately 1.4km of the road section has a paved width less than what is recommended by PMCE Ltd and widening should be undertaken irrespective of the proposed development by Cemex.

## 1.0 INTRODUCTION

On the instructions of Golder Associates Ireland Limited (Golder Associates), consultants acting on behalf of the Client, Cemex (ROI) Ltd. (Cemex), GeoTesting Ltd (GeoTesting) carried out a pavement assessment survey (PAS) of approximately 1.9 km of the existing pavement along the L6042, extending from the junction with the L2023 and extending to the Cemex property, in Walshestown, Co. Kildare (Drawing 01-Appendix A). The Pavement Assessment Survey (PAS) was carried out to address Item 31 of the Further Information Request (FIR) issued by Kildare County Council (Planning Reference 08/2159) on 25/02/09.

Item 31 of the FIR reads as follows:

*“31: Given the scale, type & duration of traffic associated with the proposed development, Applicant is requested to undertake and submit analysis & results of a pavement assessment survey (PAS) of public road L6042 from its junction with public road L2023 to the existing site entrance. PAS is necessary to establish the baseline structural condition of the existing pavement. PAS should make recommendations with regard to the required improvement of the existing pavement structure incl. increased widths to adequately accommodate the scale and type of traffic that will be generated by the proposed development. It is proposed that any grant of permission should be conditional on the recommended road improvements being implemented by the Applicant.”*

Accordingly, the PAS was conducted to:

- Establish the baseline structural condition of the existing pavement; and
- Make recommendations with regard to the required improvement of the existing pavement structure including increased widths to adequately accommodate the scale and type of traffic that will be generated by the proposed development.

GeoTesting carried out the PAS with respect to baseline conditions and required improvements to the structural condition of the pavement, Golder Associates carried out and supplied a road width survey, and PMCE Ltd, traffic consultants on the project team provided axle loadings for three traffic scenarios and also recommendations on increased road widths for the existing and currently approved HGV traffic which will be added to by the proposed Cemex development.

## 2.0 SCOPE

The extent of the investigation was as directed by Golder Associates and comprised determination of pavement structural performance by a Visual Condition Survey (VCS) and Falling Weight Deflectometer (FWD) survey; and the preparation of a report on the findings including recommendations for any improvements or upgrading required.

Three traffic scenarios were to be considered based on projected traffic volumes provided by PMCE Ltd., traffic consultants. The traffic scenarios were defined in terms of the estimated cumulative traffic loading from 2009 to 2027 in terms of millions of standard axles (msa). The traffic scenarios are presented in Appendix B. The three scenarios are summarised in Table 3 Summary of Traffic Scenarios and Axle Loads (millions of standard axles (msa) below.

**Table 3 Summary of Traffic Scenarios and Axle Loads (millions of standard axles (msa)**

Scenario	Description	Cumulative Traffic (msa)
1	Background traffic, i.e. local traffic with no local industrial component	0.52
2	Background traffic, plus truck traffic due to local operations of CPI and Behans	1.75
3	Background traffic, plus truck traffic due to local operations of CPI, Behans and Cemex	2.37

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### 3.0 SITE LOCATION

The L6042 pavement was evaluated from the junction with the L2023 at Beggars End to the Cemex site entrance in Walshestown, Co. Kildare. The pavement as surveyed is detailed in the Location Map in Appendix 1. Chainages have been assigned from CH 0m at the junction with the L2023 to CH 1900m at the Cemex site entrance.

### 4.0 VISUAL CONDITION SURVEY

A Visual Condition Survey (VCS) of the subject 1.9 km of road has been previously performed on the 12 September 2008 by a Senior Pavement Engineer. Details of this survey have been incorporated into this report to form an integrated analysis of the pavement.

The Pavement Condition Index (PCI) has been established for the pavement. The PCI values assigned are to a maximum of 100 representing excellent condition. The table below summarises the condition categories corresponding to the range of PCI values.

**Table 4 Condition categories for a Visual Condition Survey (VCS)**

PCI	Category
80-100	Excellent
70-80	Very Good
60-70	Good
50-60	Fair
40-50	Poor
20-40	Very Poor
0-20	Failed

PCI values less than about 50 indicate a pavement in poor condition requiring maintenance and/or remedial works to restore serviceability. A graphical representation of observations from the VCS is contained in Figure 3 following the text of this report. The majority of the pavement section had PCI values in the 40 to 60 indicating a predominant Fair to Poor condition overall. Because the VCS and the FWD survey assess different aspects of the pavement, there will not be complete correlation with the two results. However, the VCS results assist in establishing optimum rehabilitation strategies.

## 5.0 FALLING WEIGHT DEFLECTOMETER SURVEY

The Falling Weight Deflectometer Survey (FWD) field work was carried out on 20<sup>th</sup> June 2009. It comprised analysis of approximately 1900m of both lanes of single lane carriageway at approximately 50m centres. The FWD survey was conducted using the JILS FWD 2000 transported by a Nissan Patrol 4WD, both owned and operated by GeoTesting Ltd. Deflection readings were recorded at approximately 50m centres along the kerbside Wheel Track Zone (WTZ) in both directions commencing at CH 0m on the L6042, and terminating at the northern extremity of site entrance at CH 1900m.

The analysis of the FWD data was performed using the Elmod 6 software package. This allows pavements to be analysed like most other civil engineering structures, i.e., through the use of calculated and allowable stresses and strains at critical points within the pavement structure. Pavement structural deficiencies can be established based on any required projected traffic loading.

## 6.0 FALLING WEIGHT DEFLECTOMETER ANALYSIS

### 6.1 Interpretation

The deflection results from the FWD survey are provided on Figure 1. The estimated surface moduli values are shown on Figure 2. A material's resilient modulus is an estimate of its modulus of elasticity (E). While the modulus of elasticity is stress per unit strain, resilient modulus is the equivalent modulus for rapidly applied loads, similar to those experienced by road pavements under moving vehicles. Typical resilient modulus values in MPa would be as follows:

- Concrete ~25,000
- Lean Concrete ~10,000
- Hot Mix Asphalt ~1,500 to 4,000
- Granular Subbase ~100 to 300
- Subgrade ~20 to 100

The pavement Surface Modulus is the overall combined stiffness of the road and can be used to provide an assessment of future life. It is calculated by taking the applied stress under the FWD applied load and dividing it by the measured maximum deflection under the centre of the load.

The FWD survey produced results which indicated that the pavement may be analysed as four distinct subsections. These areas are as follows:

**Table 5 FWD Survey Assessment Zones**

<b>Zone</b>	<b>Chainage</b>	<b>Length (m)</b>
1	0 to 50	50
2	50 to 400	350
3	400 to 850	450
4	850 to 1900	1050

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## 6.2 According Structural Deficiencies

Results obtained for Deflection and Surface Modulus are detailed overleaf. The results for the left hand side (LHS), i.e. southbound lane, are detailed in Table 6. The results for the right hand side (RHS), i.e. northbound lane are detailed in Table 6. Corresponding results for the VCS are shown for comparison. Table 7 summarises the estimated structural deficiency of each pavement section in terms of equivalent asphalt overlay thickness. Essentially structural conditions are uniform across the width of the road.

The minimum overlay requirements for the background traffic condition range from 0 to 40 mm. For the Scenario 3 traffic, the minimum overlay requirements increase to 0 to 90 mm.

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**Table 6 Pavement Assessment Survey Results for both lanes of L6042**

Station (Km)	PCI	South bound (LHS) lane		North bound (RHS) lane	
		Deflection (micron)	SM (MPa)	Deflection (micron)	SM (MPa)
0	40	165	1080	178	1031
0.001		200	870	-	-
0.05		162	1079	151	1223
0.1	55	318	534	311	530
0.15		414	421	392	463
0.2		327	516	565	312
0.25	50	363	477	277	669
0.3		342	497	390	471
0.35	45	288	581	375	490
0.4		280	604	332	538
0.45	60	256	656	379	476
0.5		325	502	662	275
0.55	55	374	444	531	344
0.6		554	300	435	416
0.65	60	400	427	695	262
0.7		411	421	378	486
0.75	65	312	573	352	526
0.8		516	329	547	322
0.85	65	426	414	703	245
0.9		297	558	300	593
0.95	70	245	674	420	424
1		383	447	408	445
1.05	60	239	711	321	559
1.1		234	771	561	310
1.15	60	325	548	325	560
1.2		226	780	167	1086
1.25	50	295	589	345	517
1.3		288	626	473	373
1.35	55	255	676	410	403
1.4		389	460	320	557
1.45	60	316	557	276	640
1.5		212	833	171	1050
1.55	50	355	488	513	341
1.6		261	675	330	542
1.65	50	282	611	189	985
1.7		304	571	220	805
1.75	45	257	680	331	536
1.8		263	667	207	872
1.85	45	251	666	145	1229
1.9		331	534	532	313

**Table 7 Chainage & Overlay Scenarios**

Station (Km)	Scenario 1 Background Overlay (mm)	Scenario 2 Behan & CPI & Background Overlay (mm)	Scenario 3 Behan & CPI & Cemex & Background Overlay (mm)
0	0	0	0
0.001			
0.05			
0.1			
0.15	40	50	50
0.2			
0.25			
0.3			
0.35			
0.4			
0.45			
0.5	40	80	90
0.55			
0.6			
0.65			
0.7			
0.75			
0.8			
0.85			
0.9	40	50	80
0.95			
1			
1.05			
1.1			
1.15			
1.2			
1.25			
1.3			
1.35			
1.4			
1.45			
1.5			
1.55			
1.6			
1.65			
1.7			
1.75			
1.8			
1.85			
1.9			

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### **6.3 Zone 1 Chainage 0 to 50m**

This area of pavement extends from the junction of L2023 at Beggars End to CH 50. It displays an average Surface Modulus in excess of 1050 MPa which indicates that this area of pavement is of sufficient construction to cater for existing traffic levels in the long term, and indeed would continue to perform adequately in the medium term with the projected increased traffic loadings for Scenario 2 and 3. Average estimated remaining life span at predicted traffic levels is in excess of 20 years.

### **6.4 Zone 2 Chainage 50 to 400m**

Results for deflection and Surface Modulus of the section of pavement extending from CH 50 to CH 400 confirm this road to be in generally poor condition. It displays an average Surface Modulus of 507 MPa which indicates that this pavement cannot continue to perform under projected future traffic loadings, including under baseline and added loads from the two 'approved' developments. This area requires an asphalt overlay of 40 to 50 mm depending on traffic scenarios.

### **6.5 Zone 3 Chainage 400 to 850m**

Results for deflection and Surface Modulus of the section of pavement extending from CH 400 to CH 850 show it is also in poor condition. It displays an average Surface Modulus of only 412 MPa which indicates that this pavement cannot continue to perform under projected future traffic loadings including under baseline and added loads from the two 'approved' developments. This area requires significant asphalt overlay of between 40 to 90 mm depending on traffic scenarios.

### **6.6 Zone 4 Chainage 850 to 1900m**

Results for deflection and Surface Modulus of the section of pavement extending from CH 850 to CH 1900 and is in fair to poor condition. While there are areas that exhibit reasonable results, there are also areas showing high deflections under load. When analysed in its entirety this section displays an average Surface Modulus of 625 MPa which indicates that this pavement cannot continue to perform under projected future traffic loadings including under baseline and added loads from the two 'approved' developments. The projected asphalt overlay deficiencies range from 40 to 80 mm depending on traffic scenarios.

## 7.0 RECOMMENDATIONS

### 7.1 General

With respect to recommendations for upgrading of the existing pavement, we have considered an overlay option as being most suitable in all areas. All calculations are based on the data retrieved during FWD analysis. The Benkelman Beam method was employed to determine overlay recommendations based on the estimated Surface Modulus values, and the projected future traffic loading of 2.37 msa corresponding to design traffic to 2027 for Scenario 3.

### 7.2 Rehabilitation Strategy

To upgrade the subject 1.9 km section of the L6042 to sustain the predicted traffic volumes as anticipated in Scenario 3 (i.e. 2.37 msa), the following actions are recommended for each zone:

**Table 8 Recommended upgrade actions for each zone**

Zone	Action required
1	No action required
2	Repair localised distressed areas, as required and overlay with 50mm Wearing Course.
3	Repair localised distressed areas, as required and overlay with 90mm of Asphalt, comprising 40mm Wearing Course over 50mm Base Course.
4	Repair localised distressed areas, as required and overlay with 80mm of Asphalt, comprising 40mm Wearing Course over 40mm Base Course.

Table 7 above can be used to indicate the overlay requirements for Scenarios 1 and 2. It is assumed that only one overall overlay strategy will be implemented, i.e. Scenario 3. To implement Scenario 1 or 2 upgrading knowing the projected traffic would not make sense and would not provide a serviceable pavement for the design period. Assuming Scenario 3 upgrading is implemented then Cemex would be responsible for the additional 10mm of overlay required on Zone 3 and for the additional 30mm overlay required on Zone 4.

### 7.3 Lane Width Deficiencies

A land surveyor from Golder Associates measured the existing lane widths at 50 m intervals along the 1.9 km road section. These measurements are presented on Drawing 1 (Appendix A). Recommendations on carriage way improvements are presented by PMCE Ltd (Appendix B). It is recommended that for an access road carrying frequent haul trucks, minimum 3m wide lanes are required. The survey suggests that approximately 1.3km of the road section has a paved width



less than the minimum 6m required. The minimum paved carriageway width is 4.7 m. For minor deficiencies, up to about 0.3m, widening can be achieved by excavating to a depth of 300 mm and placing Clause 804 compacted to flush with existing pavement. The new overlay should extend out to the required width. For widening beyond 0.3 m, excavation at the edge of the existing pavement should extend to 300 mm. Place Clause 804 compacted to 50mm below existing pavement surface. Place 50 mm of asphalt Base Course to flush with existing pavement. Then place new overlay over required 6.0 m width.

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# FIGURES

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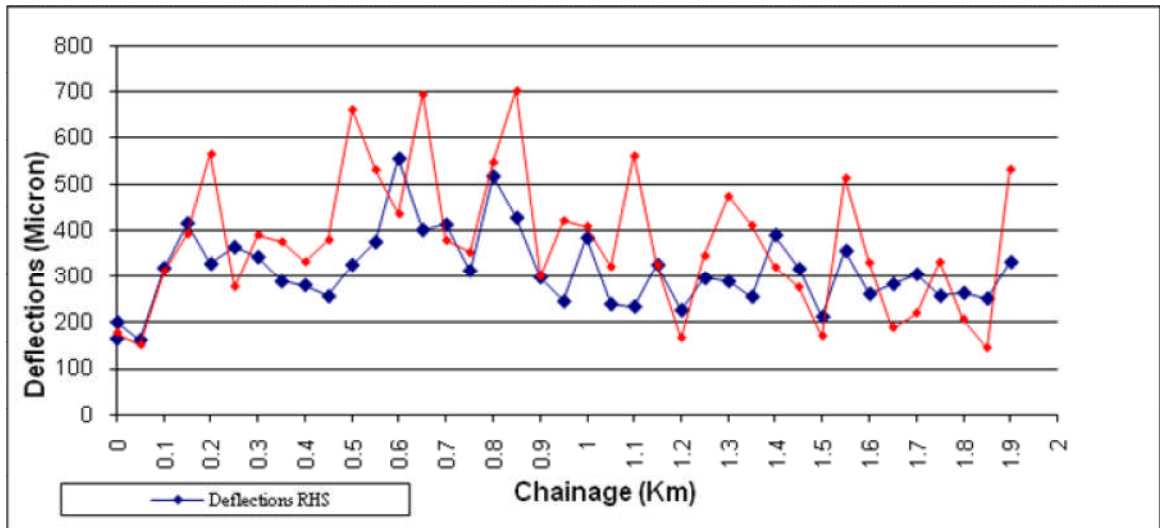


Figure 1 Measured deflections

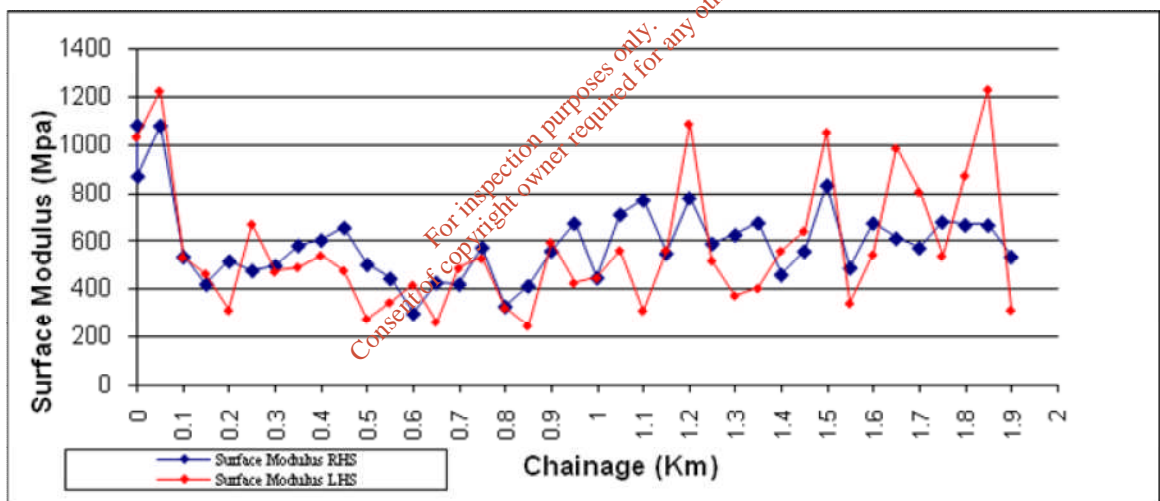
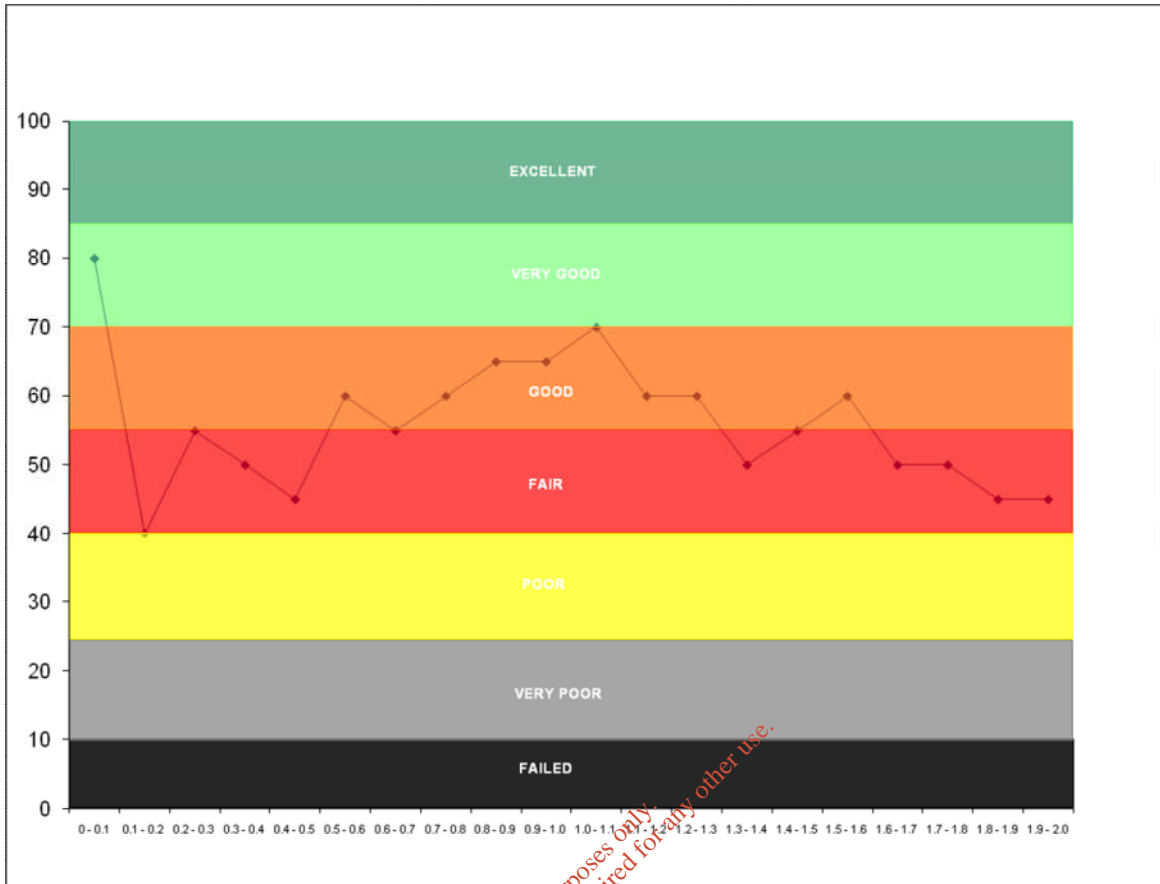


Figure 2 Surface modulus



**Figure 3 Visual Condition Survey observations**

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## APPENDICES

## APPENDIX A

### Site Location Map

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## **APPENDIX B**

### **PMCE letter Re. Axle Loading on the L6042 County Road**

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## Dower, Aisling

---

**From:** Dower, Aisling  
**Sent:** 22 July 2009 17:51  
**To:** 'BLoughlin@kildarecoco.ie'  
**Subject:** 090722 AD-BL Items 15, 29  
**Attachments:** AC correspondence.pdf

Hi Bridget,

Further to our earlier conversation, I'd appreciate it if you could confirm your position on the following items.

- Item 15: "Please confirm compliance with the County Development Plan wherein it states that 'Rights of way across large pits are important in order to link Punchestown Race Course with future bridle path along road 211'".

I have had some correspondence with Alan Cuniffe in relation to this; he sent on some maps from the 1999 and 1985 plan which he believed illustrated the existing rights of way (please see attached), however having reviewed these it would seem that these bridle paths and trails were *objectives* of the respective Development Plans, rather than actual existing public right of ways. Are these actually existing public right of ways??

- Item 29: "The Heritage Officer has raised the following concerns: The restoration plan has no reference to the Pilgrim walk and the installation of an interpretative panel as stated in the EIS. Where will the interpretative panel be installed? Will the reinstatement of the Pilgrim walk be promoted and accessible to the public? Will there be public access to the restored "Priests Hill" identified on the site?"

As discussed in our brief meeting earlier, future site ownership is uncertain. Several objections and submissions have been made in relation to the possibility of car parks and public access giving rise to anti-social behaviour in the area. In light of this, and uncertainty about future site ownership post-restoration, we expect to adjust the restoration plan to leave out planned public access, interpretative panels, etc. However, the restoration of Priests Hill remains an objective of the restoration works.

If you could reply by email at your earliest convenience I'd really appreciate it.

Thanks in advance,  
Best wishes,  
Aisling

---

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## Dower, Aisling

---

**From:** Bridget Loughlin [BLoughlin@kildarecoco.ie]  
**Sent:** 31 July 2009 13:29  
**To:** Dower, Aisling  
**Cc:** Alan Cunniffe  
**Subject:** 09/0722

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Aisling

Your comments on the above file are noted. I appreciate the management of the proposed walk way and park would be difficult to plan given the uncertain future ownership of the site. While the restoration of the Pilgrim Walk may not now be feasible, the restoration of the priests Hill should proceed.

While the provision of an interpretative panel along the proposed Pilgrim Walk is not considered feasible now. I suggest you consider relocation one Panel to the Punchestown side of the site, where people walking in Punchestown can view the panel

If you have any queries regarding the above please contact me at 045 980791.

regards

Bridget

Bridget Loughlin  
Heritage Officer  
Kildare County Council  
Planning Dept.  
Aras Chill Dara  
Devoy Park  
Naas  
Co Kildare

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Tá an ríomhphost seo príobháideach agus ní ceadmhach úsáid an ríomhphost seo d'éinne ach don té ar seoladh chuige é. D'fhéadfadh go mbeadh eolas inti atá faoi phribhléid agus rúnda de réir an dlí. Munar duit an ríomhphost seo, déan teagmhail leis an seoltóir comhluath agus is féidir. D'fhéadfadh nach iad tuairimí Chomhairle Chontae Chill Dara na tuairimí curtha in iúl ins an ríomhphost seo.

Déanann Comhairle CHontae Chill Dara iarracht na ríomhphoist a chosaint ó víris. Mar sin féin, moltar duit gach ríomhphost a scanadh mar ní ghlacann an Comhairle aon dliteanas i leith damáiste dod' chórais.

\*\*\*\*\*  
\*\*\*\*\*

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posted 21/5/09 A.D.

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Peter Black,  
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Kildare County Council,  
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Devoy Park,  
Naas,  
Co. Kildare.

21 May 2009  
09 5071 50022.L1/D.0

**RE: PLANNING REGISTER REFERENCE NO. 08/2159**

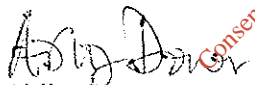
Dear Mr. Black,


Further to a planning application submitted by Golder on behalf of Cemex ROI Limited to Kildare County Council, a request has been made for further information. This planning application is for the "*continuation of restoration activities at their existing sand and gravel pit in the townlands of Walshestown, Blackhall, Tipperkevin and Bawnogue, Co. Kildare. It is the intention of the Applicant to restore the lands back to Eastern Kildare etc. at Walshestown, Blackhall, Tipperkevin and Bawnogue, Co. Kildare*".

Item 28 of the request for further information necessitates contacting the Conservation Officer in order to ascertain if there are any requirements from this division with regard to this development and if so, to submit any proposals to these requests with the response to further information (please see attached extract from further information request).

Please notify Golder Associates if you have any comments to convey in relation to the above.

Yours sincerely,  
**GOLDER ASSOCIATES IRELAND LIMITED**

  
Aisling Dower  
Environmental Scientist

  
Conor Wall  
Project Manager

Attachments: Extract from Kildare County Council Further Information Request – Item 28

**Attachment 1**

Planning Reference 08/2159 Request for Further Information: Item 28

*28. "Please contact Peter Black, Conservation Officer, Kildare County Council, 045-980807 to ascertain any requirements that he may have and submit proposals to his requests with your formal response to the further information."*

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**Golder Associates**

## Dower, Aisling

---

**From:** Peter Black [Pblack@kildarecoco.ie]  
**Sent:** 24 August 2009 11:38  
**To:** Dower, Aisling  
**Subject:** RE: 08/2159-restoration sand & gravel pit-FI

Hi Aisling,

Following our telecon 24/8 you have confirmed that there are no Protected Structures, or Buildings or Structures classified under NIAH either within the site or adjacent to the site, therefore a Conservation Impact Statement is not required in this instance. For any Archaeological issues arising please contact the DEHLG Planning Advisory unit.  
Regards - Peter Black ACO KCC.

>>> "Dower, Aisling" <Aisling\_Dower@golder.com> 20/08/2009 11:21 >>>

Hi Peter

Following consultation with several RIAI Conservation Architects, it is not immediately apparent why the provision of a Conservation Impact Statement is required, given that there are no Protected Structures, or Buildings or Structures classified under NIAH either within the site or adjacent to the site. I have made numerous attempts over the past few weeks to contact you by phone in relation to this matter and have left several voice messages. If you could clarify whether there are any specific buildings relating to your request as soon as possible we would very much appreciate it.

Kind regards,  
Aisling

Aisling Dower (M.Sc., AIEEM) | Ecologist | Golder Associates Ireland

Town Centre House, Dublin Road, Naas, Co. Kildare, Ireland  
T: +353 45 87 4411 | F: +353 45 87 4549 | M: +353 85 7112785 | E:  
Aisling\_Dower@golder.com | www.golder.com

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Directors: M. Gilligan, M. L. J. Maher, G.F. Parker, C. Wall, D.

Andreis (Italy)

VAT No.: 8297875W

Please consider the environment before printing this email.

-----Original Message-----

**From:** Peter Black [mailto:Pblack@kildarecoco.ie]  
**Sent:** 09 June 2009 12:56  
**To:** Dower, Aisling  
**Cc:** Alan Cunniffe  
**Subject:** 08/2159-restoration sand & gravel pit-FI

Aisling Dower  
Environmental Scientist  
Golder Associates

Dear Aisling,

I confirm from our telecon 9/6/09 that the built heritage FI requirements on the above are as follows:

1. That an RIAI grade 2 Conservation Architect or equivalent provide a Conservation Impact Statement and mitigation measures as a result of the proposed restoration works and their affect on existing vernacular, or NIAH , or Protected Structures and their historic designed landscape within or adjacent to the existing sand & gravel pit.

Regards - Peter Black ACO KCC

\*\*\*\*\*  
Tá an ríomhphost seo príobháideach agus ní ceadmhach úsáid an ríomhphost seo d'éinne ach don té ar seoladh chuige é. D'fhéadfadh go mbeadh eolas inti atá faoi phribhléid agus rúnda de réir an dlí. Munar duit an ríomhphost seo, déan teagmhail leis an seoltóir comh luath agus is féidir. D'fhéadfadh nach iad tuairimí Chomhairle Chontae Chill Dara na tuairimí curtha in iúl ins an ríomhphost seo.

Déanann Comhairle Chontae Chill Dara iarracht na ríomhphoist a chosaint ó víris. Mar sin féin, moltar duit gach ríomhphost a scanadh mar ní ghlacann an Comhairle aon dliteanas i leith damáiste dod' chórais.

\*\*\*\*\*  
\*\*\*\*\*

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\*\*\*\*\*  
Tá an ríomhphost seo príobháideach agus ní ceadmhach úsáid an ríomhphost seo d'éinne ach don té ar seoladh chuige é. D'fhéadfadh go mbeadh eolas inti atá faoi phribhléid agus rúnda de réir an dlí. Munar duit an ríomhphost seo, déan teagmhail leis an seoltóir comh luath agus is féidir. D'fhéadfadh nach iad tuairimí Chomhairle Chontae Chill Dara na tuairimí curtha in iúl ins an ríomhphost seo.

Déanann Comhairle Chontae Chill Dara iarracht na ríomhphoist a chosaint ó víris. Mar sin féin, moltar duit gach ríomhphost a scanadh mar ní ghlacann an Comhairle aon dliteanas i leith damáiste dod' chórais.

\*\*\*\*\*  
\*\*\*\*\*

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posted 21/5/09 A.D.

**Golder Associates Ireland Limited**  
Town Centre House,  
Dublin Road, Naas,  
Co. Kildare, Ireland  
Tel: [353] (0)45 874411  
Fax: [353] (0)45 874549  
http://www.golder.com



Michael Fitzsimons,  
Chief Fire Officer,  
Central Fire Station,  
Newbridge Industrial Estate,  
Newbridge,  
Co. Kildare.

21 May 2009  
09 5071 50022.L1/D.0

**RE: PLANNING REGISTER REFERENCE NO. 08/2159**

Dear Mr. Fitzsimons,


Further to a planning application submitted by Golder on behalf of Cemex ROI Limited to Kildare County Council, a request has been made for further information. This planning application is for the "*continuation of restoration activities at their existing sand and gravel pit in the townlands of Walshestown, Blackhall, Tipperkevin and Bawnogue, Co. Kildare. It is the intention of the Applicant to restore the lands back to Eastern Kildare etc. at Walshestown, Blackhall, Tipperkevin and Bawnogue, Co. Kildare*".


Item 27 of the request for further information necessitates contacting the Fire Services Department in order to ascertain if there are any requirements from this division with regard to this development and if so, to submit any proposals to these requests with the response to further information (please see attached extract from further information request).

Please notify Golder Associates if there are any comments to be made by the Fire Services Division in relation to the above.

Yours sincerely,

**GOLDER ASSOCIATES IRELAND LIMITED**

  
Aisling Dower  
Environmental Scientist

  
Conor Wall  
Project Manager

Attachments: Extract from Kildare County Council Further Information Request – Item 27

## Dower, Aisling

---

**From:** Michael Fitzsimons [mfitzsimons@kildarecoco.ie]  
**Sent:** 24 August 2009 10:39  
**To:** Dower, Aisling  
**Subject:** T0019840 Planning file 2159/08  
**Attachments:** Rich-Text-Format.rtf

Michael FitzSimons  
Central Fire Station  
Newbridge  
+353-45-431370 (phone)  
+353-87-2553207

\*\*\*\*\*

Tá an ríomhphost seo príobháideach agus ní ceadmhach úsáid an ríomhphost seo d'éinne ach don té ar seoladh chuige é. D'fhéadfadh go mbeadh eolas inti atá faoi phribhléid agus rúnda de réir an dlí. Munar duit an ríomhphost seo, déan teagmhail leis an seoltóir comh luath agus is féidir. D'fhéadfadh nach iad tuairimí Chomhairle Chontae Chill Dara na tuairimí curtha in iúl ins an ríomhphost seo.

Déanann Comhairle CHontae Chill Dara iarracht na ríomhphoist a chosaint ó víris. Mar sin féin, moltar duit gach ríomhphost a scanadh mar ní ghlacann an Comhairle aon dliteanas i leith damáiste dod' chórais.

\*\*\*\*\*

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\*\*\*\*\*

MPF/KDM

22/05/2009

Kildare Co Council  
Aras Chill Dara  
Devoy Park  
Naas  
Co Kildare

**RE 2159\_08 FOR THE CONSTRUCTION OF RESTORATION ACTIVITIES AT THEIR  
EXSITING SAND AND COMMENT\_2**

**AT WALSHSTOWN  
BLACKHALL  
TIPPERKEVIN  
BAWNOGUE**

With reference to yours of 16/02/2009 concerning the above application, I am to state that I have no objection to the GRANT of planning permission for this development.

Please let me have a copy of the Councils final decision.

I retain plans.

.....  
**MICHAEL P FITZSIMONS  
CHIEF FIRE OFFICER**

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# WASTE WATER MAINTENANCE LTD.

D2 Tougher Business Park, Newhall, Naas, Co. Kildare.  
Tel: 045 447585/447584. Fax: 045 447584. Email: info@wastewater.ie



To: The Environmental Section  
Kildare County Council

Re: Cemex Site

Date: 30/06/09

---

To Whom It May Concern:

Waste Water Maintenance Ltd has carried out an on-site suitability assessment and percolation tests on this site.

During the assessment the existing septic tank on site was inspected and found not to meet the EPA Guidelines and therefore it is considered unsuitable for continued use and will need to be replaced with a new system.

It was noted that the soil structure in the trial hole for the first 0 – 0.8 / 1.0m of subsoil was very compact and most likely have been compacted over time by use of heavy traffic over time while the quarry was in operation.

In addition as per the recommendations in Section 5.0 of the Site Characterisation Form it is advised that the subsoil be loosened to a minimum depth of 1.5m and that the percolation area is fenced off to prevent heavy traffic from causing any damage by compression to the area.

A larger polishing filter has also been recommended to allow for any additional loading to the system by truck drivers or site visitors as added protection.

Please feel free to contact me should you require any further information on 086-6042822.

Yours sincerely,

A handwritten signature in black ink, appearing to be "A. Comerford".

Aidan Comerford  
Dip. EIA/SEA Mgmt.  
EPA/FAS Certified

## SITE SUITABILITY REPORT

Test Compiled By: Waste Water Maintenance Ltd.  
Planning Reference Number: Not Available  
Job No: 2165

**NAME:** Cemex ROI Ltd.  
**SITE:** Walshestown Pit, Walshestown, Co. Kildare  
**Water / Bedrock below ground level:** Not encountered at time of testing  
**Average T-Value:** 25  
**Average P-Value:**  
**Soil Type:** Grey Brown Podzolics  
**Sub Soil:** Limestone sands & gravels  
**Bedrock Type:** Silurian Metasediments & volcanics  
**Aquifer Type:** Pu-Poor Aquifer-Bedrock which is Generally Unproductive  
**Vulnerability Class:** High  
**Ground Water Protection Response:** R1  
**Important Surface Features:** None noted

### SITE CONDITIONS FROM ABOVE INFORMATION:

The site should be suitable for an on-site sewage system subject to good practice.

### RECOMMENDATIONS:

With no water in the trial hole and good soakage recorded in the percolation tests the site is suitable for an on-site sewage system subject to good practice. The existing septic tank is considered unsuitable and should be replaced. Taking into consideration the surface waters it is recommended to install an Advanced Treatment System discharging the effluent to a constructed subsurface polishing filter. The base of the trenches should be positioned between 0.8/1.0m. The system must be installed in accordance with the EPA Waste Water Manual for Domestic Houses.

The percolation pipes should be rigid pipe not land drainage pipe and there should be a minimum distance of 0.9m of soil between the bottom of the percolation trench and water table or bedrock at all times. The trenches have to be 450mm wide with 2.45m between the centres of the pipes.

With a loading taken at 40 litres per person per day a polishing filter of 21 linear metres would be required. However taking into consideration the surface waters and possible additional usage from truck drivers and site visitors it is recommended to install 48 linear metres in the polishing filter to provide added protection. No single length of trench should exceed 20m, therefore the required length of trench must be constructed as a series of shorter trenches.

**COMMENTS:** We would recommend an **Oakstown BAF Sewage Treatment System (EN Certified) (See enclosed specifications)** serving up to 6 staff and allowing for some additional usage by drivers and site visitors subject to the above recommendations and the County Councils approval.

If you would like any further information on treatment plants please contact the office.

Regards,

  
Aidan Comerford  
Director

# SITE CHARACTERISATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM

## SITE LOCATION

Walshestown Pit, Walshestown, Naas, Co. Kildare

## DATE

30/06/2009

Job Number

2165

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## QUALITY CONTROL RECOMMENDATION:

In view of the recent EPA report with concerns to groundwater pollution we recommend that Waste Water Maintenance carry out a site visit to verify that the correct type and size of percolation / polishing filter area is installed as recommended in our reports. A verification report can be forwarded to the County Council if required.

## Table of Contents

- 1 General Details
- 2 Desk Study
- 3 On-Site Assessment
  - 3.1 *Visual Assessment*
  - 3.2 *Trial Hole*
  - 3.3 *Percolation Test*
- 4 Conclusions
- 5 Recommendations

### Appendix:

- > Site Maps
- > EPA Tables
- > Test Hole & Site Photographs
- > Site Specific Cross Section Of Percolation Trench

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## 1.0 General Details

<i>Name of applicant:</i>	Cemex ROI Ltd	
<i>Address of applicant</i>	Block A1, Eastpoint Business Park, Dublin 3	
<i>Phone Number:</i>	c/o Goulder Associates Ireland 045-874411	
<i>Fax Number:</i>		
<i>E-mail:</i>		
<i>Site Location:</i>	Walshestown Pit, Walshestown, Naas, Co. Kildare	
<i>Facility Usage:</i>	Small Office & Staff	Maximum 5 staff. Small canteen with microwave and toaster only
<i>Proposed Water Supply:</i>	Mains	

## 2.0 Desk Study

<i>Soil Type:</i>	Minimal Grey Brown Podzolics		
<i>Sub Soils:</i>	Limestone sands & gravels		
<i>Bedrock Type:</i>	Silurian Metasediments & volcanics		
<i>Aquifer Type:</i>	Pu-Poor Aquifer-Bedrock which is Generally Unproductive Lg-Gravel Aquifer		
<i>Vulnerability:</i>	High		
<i>Groundwater Protection Scheme (Y/N):</i>	Yes		
<i>Groundwater Protection Response:</i>	R1		
<i>Source Protection Area</i>	SI	<input type="text" value="No"/>	SO <input type="text" value="No"/>
<i>Presence of Significant Sites:</i>	Located on old quarry grounds with adjacent quarry to NE on opposite side of road		
<i>Past Experience in the Area:</i>	Generally good soakage		
<i>Comments:</i>	Groundwater may be a target		

### 3.0 On-Site Assessment

#### 3.1 Visual Assessment

<i>Landscape Position:</i>	Hilly
<i>Slope:</i>	Slopes from rear SW to NE to almost flat at test area Slope 1:10 to 1:20
<b>Surface Features</b>	
<i>Houses</i>	None within 100m, Old site offices on site >10m
<i>Site Boundaries</i>	Fencing, trees and some wall frontage
<i>Roads</i>	Local road passes front north eastern boundary
<i>Existing Land Use</i>	Old sand and gravel quarry
<i>Outcrops (rock and/or soil)</i>	None within 150m
<i>Surface Water Ponding</i>	None noted at time of testing
<i>Lakes/Surface water features</i>	Pond area lies in the northern corner of the site >100m
<i>Beaches / shellfish areas/ wetlands</i>	Pond area lies in the northern corner of the site >100m
<i>Karst Features</i>	None within 150m
<i>Watercourse / stream</i>	Stream flows along the front boundary >15m
<i>Drainage Ditches</i>	None around the site
<i>Wells</i>	None
<i>Springs</i>	None noted
<i>Type of Vegetation</i>	No soakage indicators noted
<i>Ground Condition</i>	Very firm mainly hardcore / gravel based surface
<i>Comments on above information incorporation desk study information:</i>	
Surface waters are a target. Fast flowing stream passes front of the site.	
Limited usage of an on-site system will reduce risk.	
Existing septic tank old, single chamber and considered unsuitable - will need to be replaced	

### 3.2 Trial Hole

Date and time of excavation: 16/06/2009  
 Date and time of examination: 30/06/2009  
 Depth of Trial Pit (m): 2.1m  
 Depth from ground level to water table (m): Not encountered at time of testing  
 Depth from ground level to bedrock (m): Not encountered at 2.1m

#### Details of trial hole:

Depth (m)	Soil Classification & Texture	Soil Structure	Density / compactness	Colour	Preferential Flowpaths	T-Test
0.1	Hardcore / gravelly Surface					
0.2						
0.3						
0.4	sandy SILT/CLAY	Massive	Very Firm	Light Brown	Random	T-Top
0.5						
0.6	<b>Threads 6/8 Ribbons 80-105mm Dilates</b>					
0.7	very sandy gravelly SILT with cobbles	Block	Dense	Brown	Random	T-Base
0.8						
0.9						
1.0						
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7	<b>Threads 3/5 Ribbons 20-50mm Dilates with ease</b>					
1.8	<b>END OF PIT AT 2.1M</b>					
1.9						
2.0						
2.1						
2.2						
2.3						
2.4						
2.5						
2.6						
2.7						
2.8						
2.9						
3.0						

Other Information: Depth of Water Ingress: None noted  
 Rock Type (if present): None  
 Plasticity / Dilatancy: See above  
 Likely T-value: >10<50

Evaluation: Groundwater is not a target. The compactness of the subsoils will affect soakage. Area has hardcore surface and has had heavy machinery around it over the years which appears to be reflected in the first 0 - 0.8m where very compact soils were encountered.

### 3.3 Percolation Test

T-test		1	2
Depth from ground level to top of test hole (mm):		600	600
Depth from ground level to base of test hole (mm):		1000	1000
Depth of test hole (mm):		400	400
Test Hole Dimensions (length x breath) (mm):		300X300	300X300
Date of Test:		30/06/2009	30/06/2009
Date Pre-soaking started:		29/06/2009	29/06/2009
Time filled to 400mm		08:38	08:39
Time at 300mm		09:30	09:24

Test hole:	1			2		
Fill No.	Time at 300mm	Time at 200mm	Δt (min)	Time at 300mm	Time at 200mm	Δt (min)
1	09:30	10:48	78	09:24	10:32	68
2	10:48	12:40	112	10:32	11:55	83
3	12:40	15:15	155	11:55	13:42	107
	Average Δt		115	Average Δt		86

Average Δt (hole1) / 4 = 28.8 (t1)      Average Δt (hole2) / 4 = 21.5 (t2)

T-value = (t1+t2) / 2 = 25.15 (min/25mm)      T =

Comment: Subsoil is suitable for the treatment of effluent

P-test		1	2
Depth of test hole (from ground level)(mm):			
Hole Dimensions (length x breath) (mm):			
Date of Test:			
Date Pre-soaking started:			
Time filled to 400mm			
Time at 300mm			

Test hole:	1			2		
Fill No.	Time at 300mm	Time at 200mm	Δt (min)	Time at 300mm	Time at 200mm	Δt (min)
1						
2						
3						
	Average Δt			Average Δt		

Average Δt (hole1) / 4 = (t1)      Average Δt (hole2) / 4 = (t2)

P-value = (t1+t2) / 2 = (min/25mm)      P =

Comment: Hardcore surface on the site for first 0 - 0.3/4m



## 4.0 Conclusions

This Site is Suitable for:

- (a) A septic tank and soil percolation system  ✓
- (b) A septic tank and intermittent filter system and polishing unit;  
or A septic tank and constructed wetlands and polishing unit  ✓
- (c) A mechanical aeration system and polishing unit  ✓

## 5.0 Recommendations

There is an existing septic tank on the site beside where the tests have been carried out. However it is a single chamber tank and old and considered unsuitable for use. Taking into consideration the proximity of the stream and the aquifer it is recommended to install an advanced treatment system to provide added protection. Having encountered very compact / dense sub soils it is advised that when constructing a subsurface polishing filter that soil loosening is also carried out to a depth of 1.5m and that the whole percolation area is fenced off to prevent heavy transport from damaging it by compressing the ground. The system must be installed in accordance with the EPA Waste water Manuals. Please see cover letter attached.

Signed: 

Aidan Comerford  
Dip. EIA/SEA Mgmt.  
EPA/FAS Certified

Address: Waste Water Maintenance Ltd.  
D2 Toughers Business Park,  
Newhall,  
Naas,  
Co. Kildare

Contact Details: Phone: 045-44 75 85  
Email : info@wastewater.ie

Date of report: 30/06/2009

## 6.0 Treatment System Design Details

System Type: An Oakstown BAF Sewage Treatment System with soil polishing filter

Proposed Discharge Route Surface  Groundwater  ✓

Size of Proposed Treatment System: Primary / Septic Tank : 3080  
Secondary System :  
Percolation Area / Polishing filter : 48m

Proposed Quality Assurance : Installation & Commissioning :  ✓

On-going Maintenance:  ✓

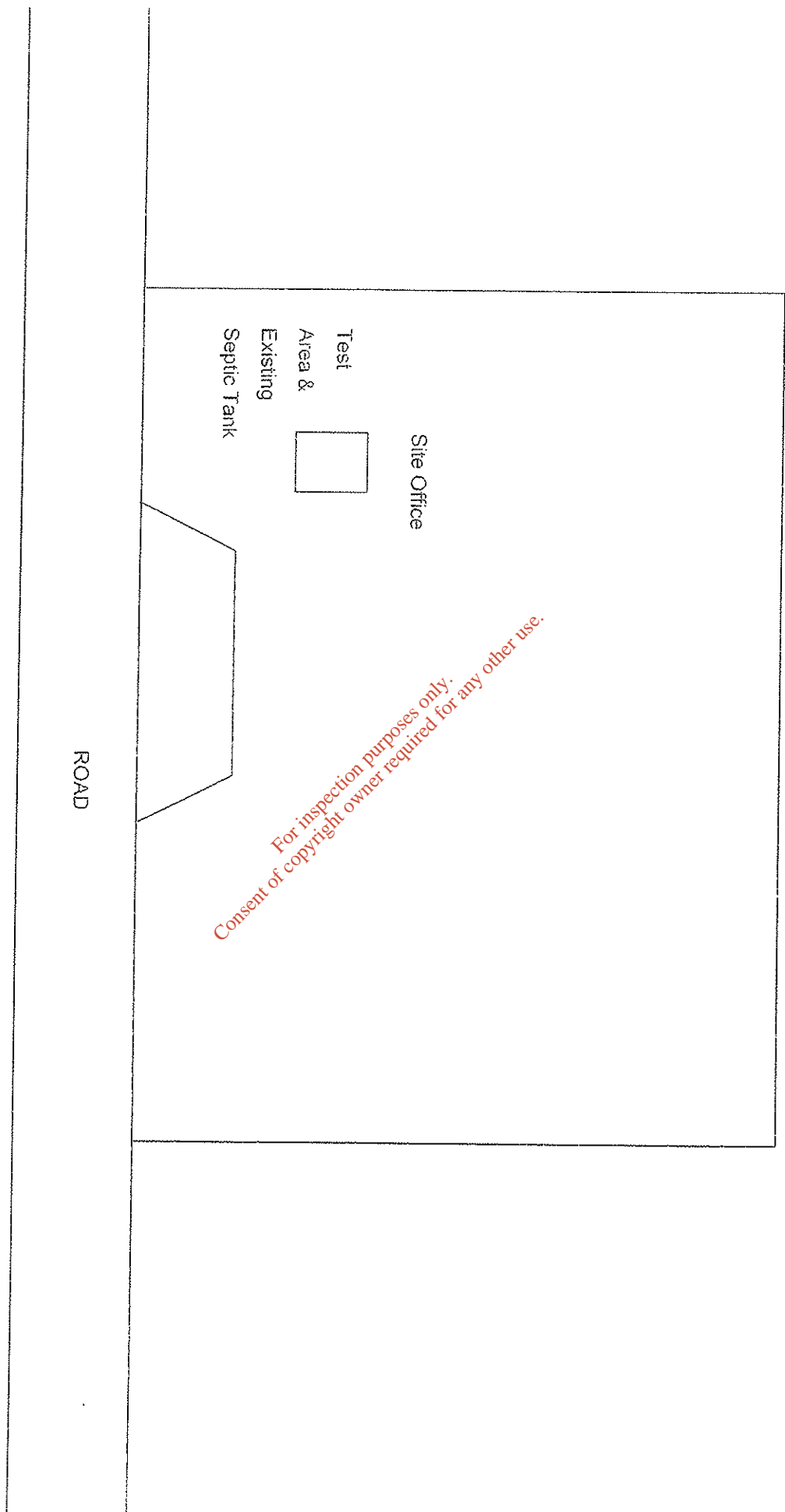
Percolation / Polishing filter Verification to be carried out by Waste Water Maintenance  ✓

APPENDIX:

- > Site Plan
- > Tables from Wastewater Treatment Manual, EPA 2000
- > Photographs of Trial hole & test holes
- > Drawing of a percolation trench from EPA Manual

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ROUGH SITE SKETCH



### Separation Tables

Where an on-site system is in the zone of contribution of a well, the likelihood of contamination and the threat to human health depend largely on five factors.

- The thickness and permeability of subsoil beneath the invert of the percolation trench;
- The permeability of the bedrock, where the well is tapping the bedrock;
- The distance between the well or spring and the on-site system;
- The groundwater flow direction; and
- The level of treatment of effluent.

Table 3 Recommended Minimum Distance between a Receptor and a Percolation Area or Polishing Filter

T or P Value	Type of soil/subsoil *	Depth of soil/subsoil (m) above bedrock (see note 1,2,3,6)	Minimum distance (m) from receptor to percolation area or polishing filter ****				
			Public Water Supply	Karst Feature	Down-gradient Domestic well or flow direction is unknown (see note 5)	Domestic well alongside (no gradient)	Up-gradient domestic well
> 30	CLAY: silty, sandy CLAY (e.g. clayey till) CLAY/SILT	1.2 >3.0	60	15	40 30	25	15
10 - 30	Sandy SILT: Clayey, silty SAND: clayey, silty GRAVEL (e.g. sandy till)	1.2 >8.0	60	15	45 30	25	15
< 10	SAND: GRAVEL; silty SAND	2.0 ** 2.0 *** >8.0 ****	60	15	60 40 30	25	15

\* BS5930 descriptions

\*\* water table 1.2-2.0m

\*\*\* water table >2.0m

\*\*\*\* The distance from the percolation area or polishing filter means the distance from the periphery of the percolation area or polishing filter and not the centre.

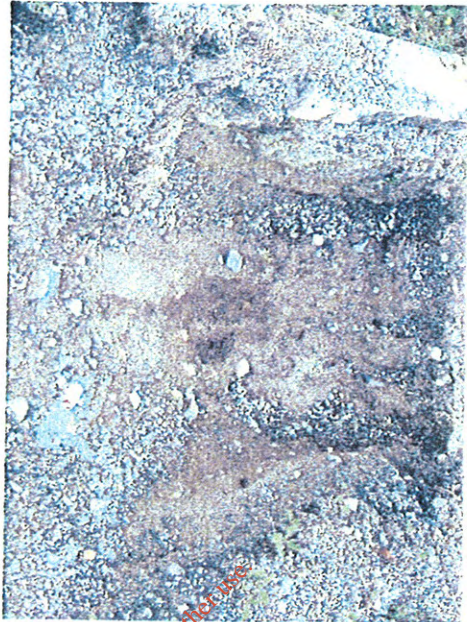
TABLE 4: MINIMUM SEPARATION DISTANCES IN METRES

Type of system	Watercourse stream	Lake	Any Dwelling	Site boundary	Road	Slope breaks/cuts
Septic tank; Prefabricated intermittent filters; mechanical aeration systems	10	50	7	3	4	4
<i>In situ</i> intermittent filters, percolation area; polishing filters	10	50	10	3	4	4

\* EPA WasteWater Treatment Manual for Single Houses

Cemex, Walshestown Pit, Walshestown, Naas, Co. Kildare

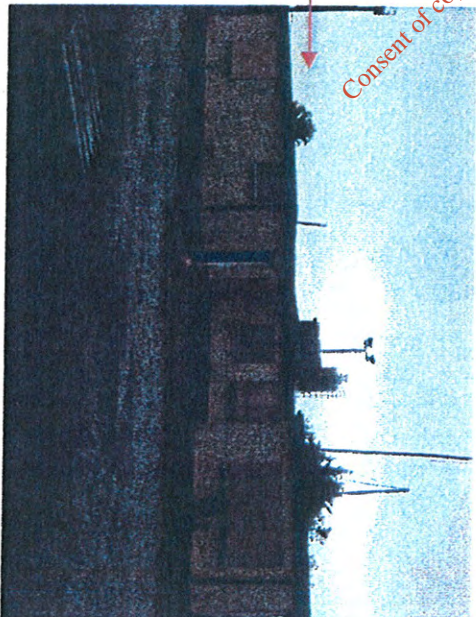
T - test Holes



Trial Hole & Existing Building

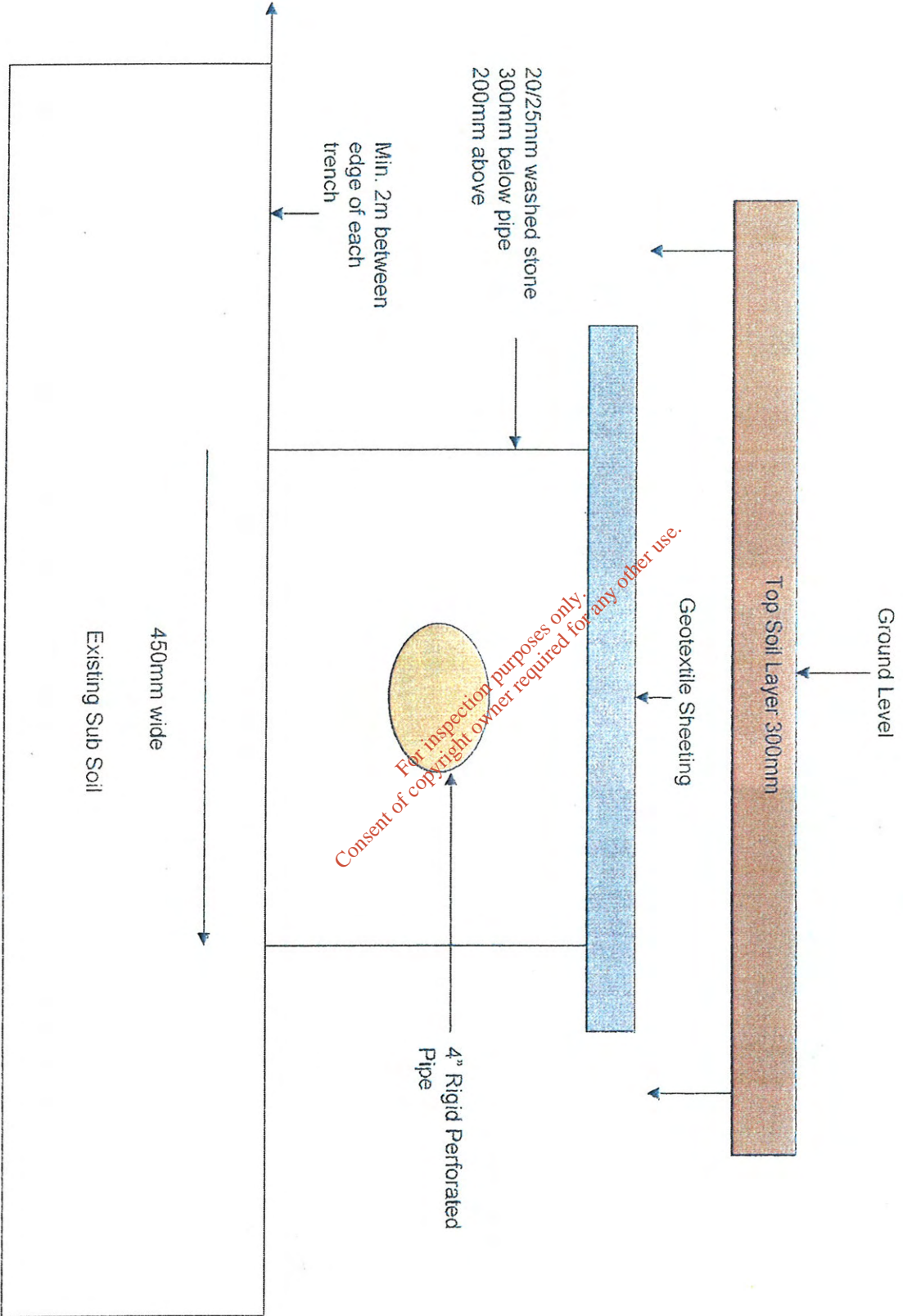


Existing Office building served by an existing septic tank



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CROSS SECTION OF PERCOLATION TRENCH





# First Ireland

First Ireland House, 15 Parkgate Street, Dublin 8, Ireland

To Whom It May Concern

Professional Indemnity Covernote

<b>Insured</b>	Waste Water Maintenance Ltd
<b>Business Description</b>	Site suitability assessments for On Site Waste Water Treatment Systems
<b>Period of Cover</b>	3 <sup>rd</sup> July 2009 to 2 <sup>nd</sup> July 2010
<b>Insurers</b>	W.R. Berkley Insurance
<b>Policy Number</b>	IPRPIA07104869
<b>Limit of Indemnity</b>	€1,000,000
<b>Limit applies to</b>	Any one claim, costs and expenses in addition.

The policy is subject to the insured's terms, conditions and limitations as contained in the policy document.

We trust this information is to your satisfaction. If you have any queries regarding any of the above information or require any further please do not hesitate to contact the undersigned.

Yours Sincerely

Peter Bourke

Peter Bourke  
Corporate Division  
Direct Dial: (01) 8820836  
Direct Fax: (01) 8816914  
[pbourke@firstireland.ie](mailto:pbourke@firstireland.ie)

Date: 27/08/2009

Directors: J. Roe (Executive Chairman), C.A. Rooney (Joint Managing), L.A. Gallagher (Joint Managing), T. Gill, P. Mee, M. Heneghan, C. Lyons, C. Duffy, S. Sheridan.

The above business name is owned by First Ireland Risk Management Ltd. Reg. No: 8292725  
First Ireland Risk Management Ltd. is a member of the Irish Brokers Association. Regulated by IFSRA as an Authorised Advisor

# Level 6 Specific Purpose Certificate Teastas Cuspóra Shainiúil Leibhéal 6

## Site Suitability On-Site Wastewater Treatment

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Awarded to  
Bronnta ar

**Aidan Comerford**

18/04/2008

*Donal O'Rourke*

Chair/Cathaoirleach FETAC

*Stam Uile Hynes*

Chief Executive/Príomhfheidhmeannach FETAC





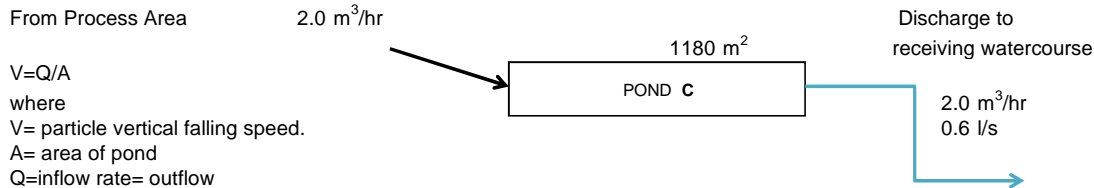


<b>Walshestown - Pond 'C' Size</b>		Naas, Co. Kildare			
SUBJECT	<b>Settling Calculations</b>				
Proj. No.	8507150022	Made by	CJP	Date	6 <sup>th</sup> April 2009
Ref.		Checked	GFP	Sheet	1 of 2
		Reviewed	GFP		

Catchment area - total reporting to pond 'C' 37,720 m<sup>2</sup> see sheet 2  
Net Precipitation 272 mm/year (Naas)

<u>Water quantity</u>	m <sup>3</sup>	m <sup>3</sup> /day	m <sup>3</sup> /mon	m <sup>3</sup> /hr	m <sup>3</sup> /s	l/s
average annual rain fall 1961-1990	10,260	28	855	1.17	0.0003	0.33
winter rainfall 30 year Av.(Oct,Nov,Dec,Jan)	5,902	48	1,476	2.02	0.0006	0.56

Water Management Flow Schematic



Settlement Lagoon (Pond 'C')

	m <sup>2</sup>
Max. area available	1,180
Effective area	389
For sand of relative density 2.65 in water at 10 degC	
Pond Settling Efficiency	33%
Q max.	0.0006 m <sup>3</sup> /s
pond area	Falling speed (Q/A)
m <sup>2</sup>	cm/s
50	0.00112
100	0.00056
150	0.00037
350	0.00016

For Particles of relative density 2.65, 1.5 & 1.2

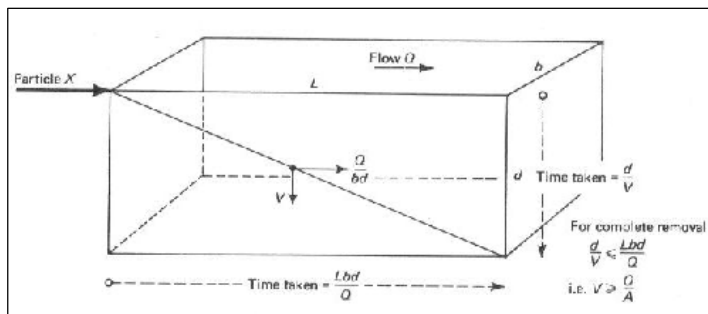
S.G.	2.65	1.5	1.2
particle size	Falling speed		
mm	cm/s	cm/s	cm/s
0.4	4.2		
0.2	2.1	0.7	0.5
0.1	0.8	0.2	0.13
0.04	0.21	0.04	0.03
0.02	0.062		
0.01	0.015	0.002	0.0008
0.005		0.0004	0.0002
0.004	0.0025		
0.002	0.00027		

The falling speed for particles greater than 0.002 mm is greater than that calculated for Pond 'C' even when allowance is made for :-

- (a) A Pond Settling Efficiency = 33%
- (b) Winter rainfall of 2.02 m<sup>3</sup>/hr

Therefore:

Particles within this size range have a vertical falling speed greater than Q/A and will settle out before they reach the outlet. Pond 'C', area 1180 m<sup>2</sup> will remove all particles sized 0.002mm and greater.



A particle of silt entering the pond with a verticle falling speed of V. Then:-

Speed of horizontal flow = Q/bd

time of horizontal flow = L/(Q/bd) = Lbd/Q

Time for falling distance d is d/V, for the particle to reach the bottom before the water leaves the pond the fall time must equal the time for horizontal flow, ie.

$d/V = Lbd/Q$  from which  $V = Q/Lb = Q/A$   
Where A is the surface area of the pond.

This is the limiting speed of fall to enable the particle to reach the bottom of the pond. All particles with a speed greater than Q/A will reach the bottom before the outlet end of the pond.  
 Particles with a speed less than Q/A will be removed in the same proportion as their speed bears to Q/A.

Ref: " Water Supply" Twort & Law.



<b>SUBJECT</b>		<b>Walshestown - Pond 'C' Size</b>			Naas, Co. Kildare	
<b>Storm Water Calculations</b>						
Proj. No.	8507150022	Made by	CJP	Date	6 <sup>th</sup> April 2009	
Ref.		Checked		Sheet	2 of 2	
		Reviewed				

**Storm water**  
 100 year event  
 Naas 38.7 mm  
 20% 46.4 mm

Catchments		Rainfall intensity	Routing	Volumetric	Run-off	volume of
Description	Area	mm/hr	Coefficient	run-off coef.	rate	Storage required
	m <sup>2</sup>	<i>i</i>	<i>C<sub>r</sub></i>	<i>C<sub>v</sub></i>	m <sup>3</sup> /s	m <sup>3</sup>
Process Area	15,250	46.4	1	0.6	0.118	425
Gravel Area (Original Offices)	2,300	46.4	1	0.15	0.004	16
Steep Grassed	13,630	46.4	1	0.4	0.070	253
Flat Grass	6,540	46.4	1	0.15	0.013	46
Total site	37,720				0.205	740

<b>Receiving</b>		m <sup>3</sup> /s	m <sup>3</sup>
	Collection in pond 'C'	0.205	740

Therefore: Settling ponds require an additional storm water capacity of:- 

740	m <sup>3</sup>
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**Pond 'C'**  
 Surface Area 

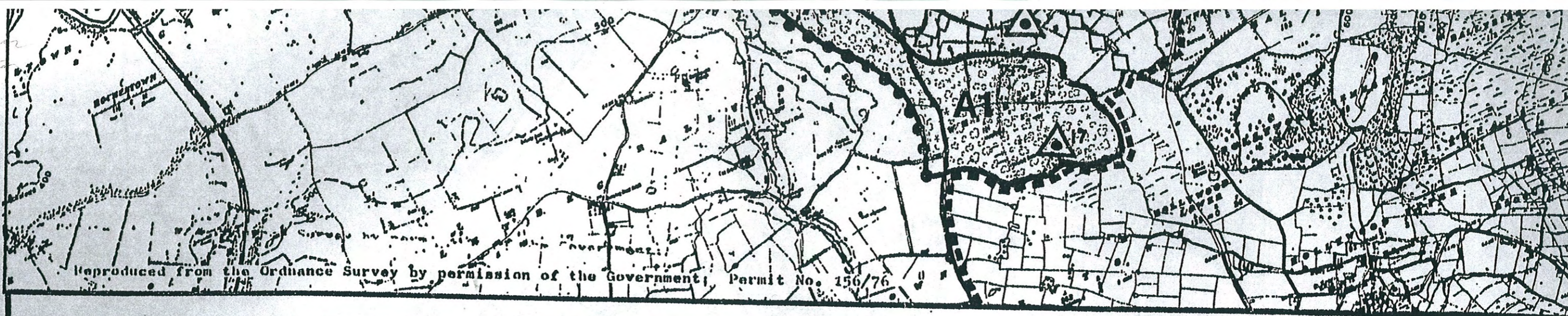
4,180	m <sup>2</sup>
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 Required Freeboard to accommodate storm water **0.63** m

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<u>For Particles of relative density 2.65 , 1.5 &amp; 1.2</u>			
SG	2.65	1.5	1.2
particle size	Falling speed		
mm	cm/s	cm/s	cm/s
0.4	4.2		
0.2	2.1	0.7	0.5
0.1	0.8	0.2	0.13
0.04	0.21	0.04	0.03
0.02	0.062		
0.01	0.015	0.002	0.0008
0.005		0.0004	0.0002
0.004	0.0025		

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# RURAL DETAIL MAP

## ZONES

- E. Extractive
  - R1 Rural Hamlets
  - R2 Low Density Development
  - R3 Urban Development
  - R4 Low Density Development
- Max. No. of Dwelling Units: 12

## ZONES

- A1 Distinctive Agricultural Character
- A2 High Visual Amenity
- A3 Liffey Valley & Reservoir Edge
- A4 Open Space Amenity

## SPECIFIC OBJECTIVES

- Extractive
- ◇ Residential
- △ Amenity
- △ Paths & Trails
- △+△ Protected Views
- △ Wildlife Refuges
- △ Look Out Points
- Restrictions of Further Access
- Roads
- Special Change of Use

SCALE 3in 1

Kildare  
County  
Council



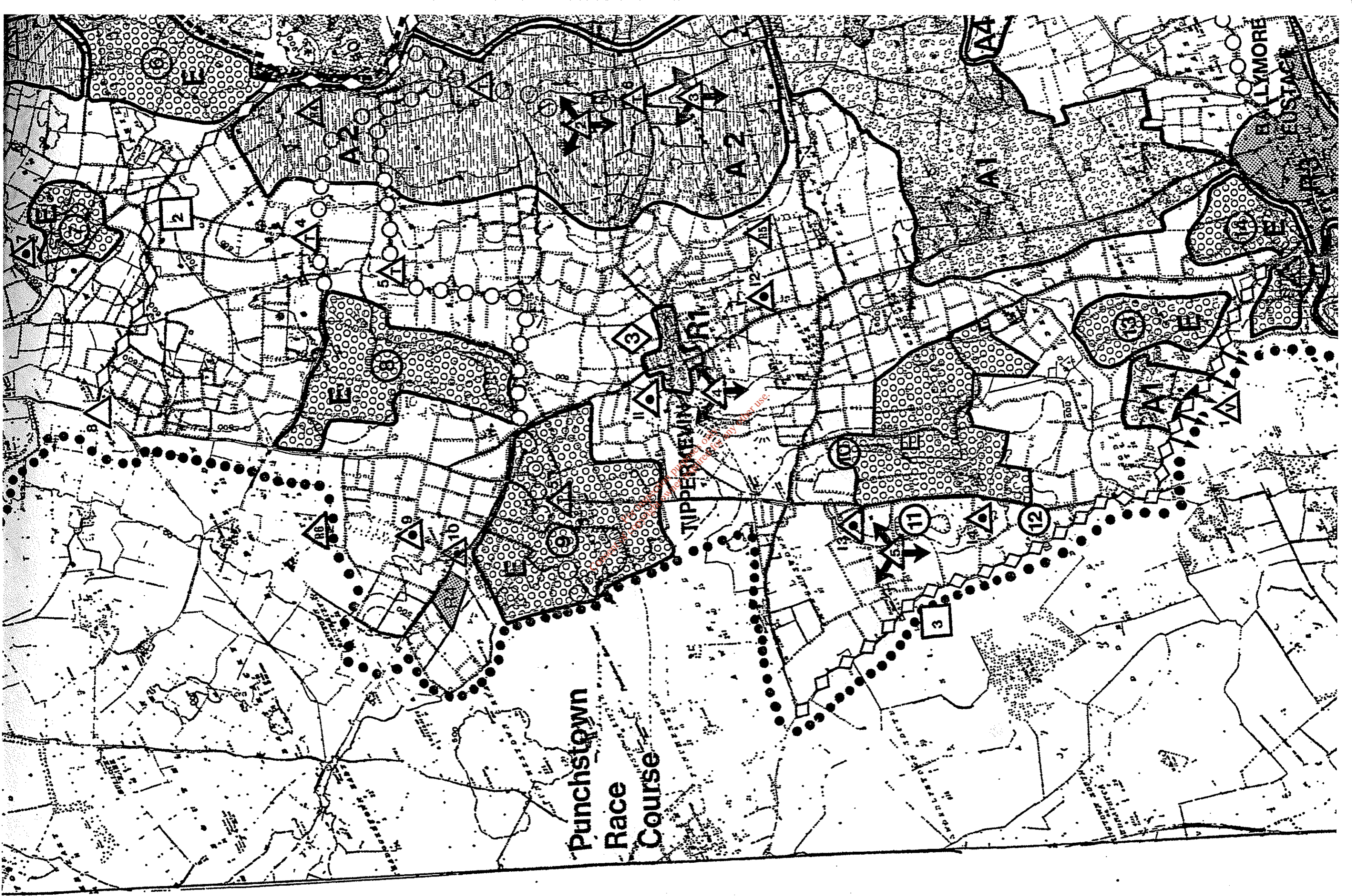
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County Development Plan 1999

Map No. 1.3

RURAL DETAIL MAP  
EAST KILDARE UPLANDS

*History,  
Please find attached  
a copy of Maps & text  
Hope it clarifies the  
issues etc.*

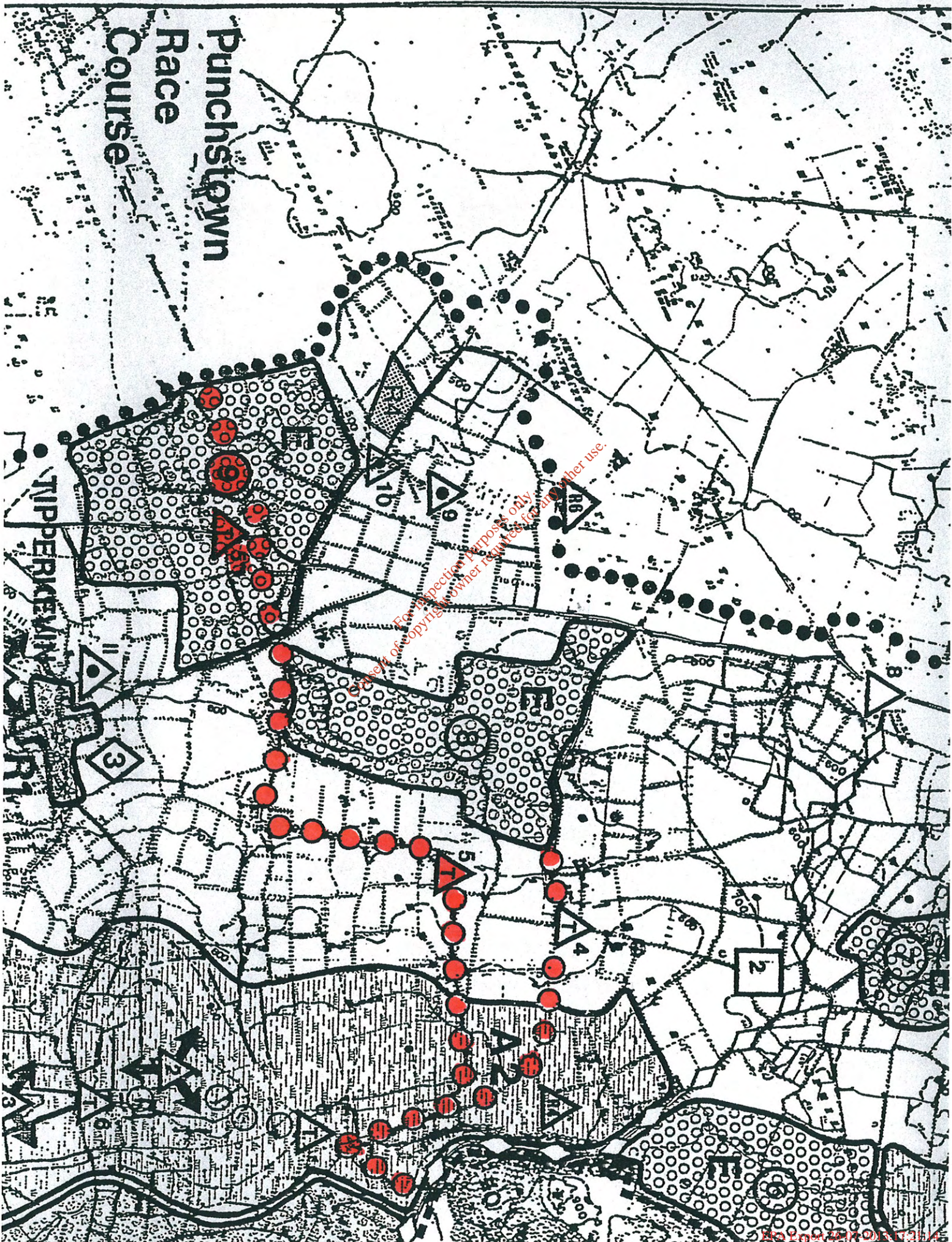


Punchstown  
Race  
Course








TIPPERARY

BALLYMORE  
EUSTACE

# Punchstown Race Course



(C) BRIDLE TRAILS AND LONG DISTANCE PEDESTRIAN PATHS

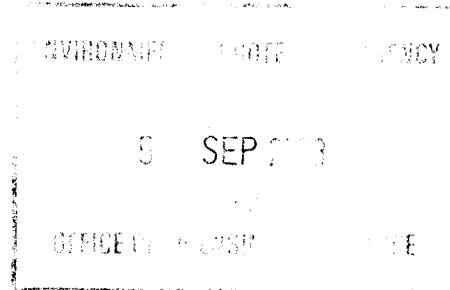
	<p>Cromwellstownhill          Cupidstownhill          Punchostown Upper</p>	<p>Investigate the creation of bridle trail and pedestrian path on border area with Wicklow.</p>	<p>Seek co-operation with Wicklow County Council for purchase of land on border between counties.</p>
	<p>Caureen</p>	<p>Council will investigate protecting existing land from use by vehicular traffic and designating it as a pedestrian and bridle trail path.</p>	<p>Seek closure on plot adjoining this lane and whose trucks are using this lane.</p>
	<p>Rad Bog</p>	<p>Investigate rehabilitation of existing lane after prohibiting further truck traffic from using it.</p>	<p>Seek co-operation of plot owners to re-route their trucks away from this lane.</p>
	<p>Athgarret</p>	<p>Investigate existing trail and path along abandoned lane and designate as pedestrian path and bridle trail.</p>	<p>Investigate right-of-way along this lane.</p>
	<p>Newtown Great</p>	<p>Designate this road as pedestrian path and bridle trail if necessary.</p>	<p>Investigate restricting through traffic to owners of farms along road.</p>
	<p>Silveror</p>	<p>Investigate creating public pedestrian path and bridle trail between Glen Ding, Rd.224.</p>	<p>Purchase two short sections of land.</p>
	<p>Ballymore Eustace East.</p>	<p>Protect existing lane from through traffic and investigate designating it as a pedestrian path and bridle trail.</p>	<p>Investigate rights-of-way along this lane.</p>



Date: 2<sup>nd</sup> September 2008

For the attention of:

Aoife Loughnane, Inspector,  
Office of Climate Licensing and Resource Use.  
Environmental Protection Agency (EPA)  
Regional Inspectorate  
McCumiskey House,  
Richview,  
Clonskeagh Road,  
Dublin 14

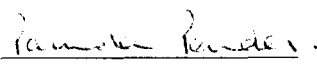


**Re: *Behan Pit at Blackhull, Naas, Co. Kildare - Letter dated 5/8/08 from the Environmental Protection Agency on Foot of an Application for a Waste Licence.***

I refer to your correspondence dated 5/8/08 relating to the above waste licence application and refer to the applicants online application form and accompanying details outlined in section B3. It is noted that the applicant makes particular reference to planning permission 592/93 and 97/1497 (refer section B3). It is the view of the Planning Authority that the applicant has failed to adequately demonstrate through the submission of appropriate documentation that a valid permission exists for the development proposed with particular reference to:

- a) the nature of development now proposed and in particular the recycling of construction and demolition waste
- b) absence of details of the restoration profile authorised under planning permission(s) (i.e drawings and details from relevant EIS(s))
- c) compliance with appropriate time periods within which restoration was to be achieved

It is recommend that the foregoing issues be clarified with the applicant.

  
George Perry  
Senior Executive Officer