

**REPORT OF THE TECHNICAL COMMITTEE ON  
OBJECTIONS TO LICENCE CONDITIONS**

<b>TO:</b>	Directors	
<b>FROM:</b>	Technical Committee	<b>- LICENSING UNIT</b>
<b>DATE:</b>	30 June 2015	
<b>RE:</b>	Objection to Proposed Determination for <b>Murphy Environmental Hollywood Limited, Industrial Emissions Licence Register No: W0129-03.</b>	

Application Details	
Class(s) of activity:	11.1, 11.2(b), 11.4(a)(iv), 11.5, 11.6
Location of activity:	Hollywood Great, Nag's Head, Naul, Co. Dublin.
Licence application received:	17 December 2010
PD issued:	25 June 2014
First party objection received:	22 July 2014
Third Party Objection received	None
Submissions on Objections received:	None
Regulation 36 Notice [IE] extension of time	17 November 2014, 25 February 2015, 09 June 2015

## Company

The application relates to the proposed development of a new integrated waste management facility. The existing activities at the facility are authorised as an inert landfill under Waste Licence Reg. No. W0129-02. The existing activities have been in operation since Waste Licence Reg. No. W0129-01 (granted 4<sup>th</sup> December 2002) became active. Murphy Environmental Hollywood Limited (MEHL) applied for an Industrial Emissions licence to:

1. Redevelop (and retain) the existing inert landfill;
2. Develop a new non-hazardous waste landfill;
3. Develop a new hazardous waste landfill;
4. Develop a new hazardous waste treatment (immobilisation) facility to pre-treat certain wastes for hazardous waste landfill; and
5. Install leachate, surface water and other landfill management infrastructure.

Planning permission, as strategic infrastructure development, was granted on 16 June 2011 by An Bord Pleanála.

The Agency's Proposed Determination of 25 June 2014 was to refuse the licence application. The Decision and Reasons for the Decision, included in the PD, were as follows:

## Decision & Reasons for the Decision

The Environmental Protection Agency is not satisfied, on the basis of the information available, that the requirements of Section 83(5) of the Environmental Protection Agency Act 1992 as amended have been met, in relation to:

- the activities that are the subject of the licence review application, and
- the status of the applicant as a fit and proper person,

and the Agency proposes to refuse to grant an Industrial Emissions licence to Murphy Environmental Hollywood Limited, Hollywood Great, Nag's Head, Naul, County Dublin, CRO Number 448931.

In reaching this decision the Environmental Protection Agency has considered the documentation relating to the licence application, Register Number W0129-03. This includes supporting documentation received from the applicant, all submissions received from other parties and the report of the Licensing Inspector. In particular, the Agency has noted and given consideration to the following reports:

- (i) Geosyntec Consultants, *Review report on an IED waste licence application by MEHL with focus on geological and hydrogeological aspects*, June 2014
- (ii) Deloitte & Touche, *Report for Environmental Protection Agency reviewing the financial position of Murphy Environmental Hollywood Ltd*, May 2014

It is considered that the proposed activity that is the subject of the licence review application presents an unacceptable risk of input of hazardous substances into groundwater which is prohibited under the Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution as implemented by S.I No. 9 of 2010, European Communities Environmental Objectives (Groundwater) Regulations, 2010, Regulation 9. Furthermore, the Board of the Agency considered that:

- The Groundwater Protection Responses for landfills (Department of Environment Community & Local Government, EPA & GSI, 1999) indicate that the installation of the proposed activity in the geological setting, as proposed, is not generally acceptable. The conditions in which the proposed activity would be acceptable have not been demonstrated to exist.
- The groundwater beneath the landfill site, as proposed, is vulnerable to contamination from the proposed activity.
- The abstraction of groundwater at the Bog of the Ring (public water supply) may influence the groundwater levels beneath the landfill site, as proposed. Consequently, if the water abstraction at the Bog of the Ring were to reduce significantly or cease altogether, this may result in a rebound of groundwater levels beneath the landfill site, as proposed. This scenario would present an unacceptable risk to groundwater because the rising groundwater levels would have the potential to undermine the integrity of the landfill.

It is considered that the situation and design of the proposed activity do not meet the necessary conditions for preventing pollution of the soil and groundwater. It is further considered that the landfill liner system, including the artificially completed geological barrier as proposed in this setting, does not provide sufficient attenuation capacity, with regard to the extent and depth of the artificially completed geological barrier and the potential for its integrity to be undermined by rising groundwater levels, to prevent a potential risk to soil and groundwater, which are requirements of the Landfill Directive.

It is considered that the applicant is not a fit and proper person as defined in Section 84(4)(c) of the EPA Act of 1992, as amended, and the applicant cannot therefore satisfy the Agency in relation to the requirements of Section 83(5)(xi) of the same Act with regard to the proposed activity.

Section 83(5) of the Environmental Protection Agency Act 1992 as amended, details the requirements with which the Agency must be satisfied before granting a licence and is detailed in Appendix I.

This report relates to a valid first party objection received by the Agency in relation to the Proposed Determination (PD) issued to Murphy Environmental Hollywood Limited on 25 June 2014.

Eighty five submissions were received in relation to the application and these were considered by the Board prior to issuing the PD.

## **Consideration of the Objection**

The Technical Committee, comprising of John McEntagart (Chair) and Kevin Motherway, has considered all of the issues raised in the First Party Objection and this report details the Committee's comments and recommendations following the examination of the objections together with discussions with the inspector, Brian Meaney, who also provided comments on the points raised. The Technical Committee consulted Scientific Officer Mr. Anthony Mannix (OEA) with regard to available data on the Bog of The Ring PWSS (public water supply scheme) and Ms. Natalya Hunter William (Hydrogeologist with the GSI) author of the Bog of the Ring Source Protection Report.

The Technical Committee carried out a reconnaissance visit to the area around the installation on 26 February 2015 in order to better understand the environmental setting, with a particular focus on matters related to hydrogeology and surface water drainage. The Technical Committee did not visit the installation.

This report considers the first party objection. No third party objections regarding the Proposed Determination were made. One letter was received from a third party but no fee accompanied it therefore it cannot be considered.

## **First Party Objection**

The applicant makes 5 points of objection in its technical submission and references the planning permission for the development to support their interpretation of the Landfill Directive and how this might interact with the Agency's determination on this licence application. The technical submission also focuses on what it considers to be misinterpretations of the site hydrogeology information. The applicant also submitted a report on the financial position of MEHL to support the applicant's position as a fit and proper person.

### **A.1. Groundwater Protection Response for Landfills**

The applicant objects to the response category assigned by the Agency to the site under the Response Matrix provided in the Agency's 'Groundwater Protection Response for Landfills'. The Agency determined that the MEHL site should be given a score of R3<sup>2</sup><sup>1</sup>. The applicant notes that this score is on the basis that the Namurian

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<sup>1</sup> The response category of a Response Matrix (R), identifies: (a) whether a proposed development is likely to be acceptable on a particular site; (b) what kind of further investigations may be necessary to reach a final decision regarding a proposed development's acceptability; and (c) what planning or licensing conditions may be necessary for a proposed development (see, *Groundwater Protection Schemes*, DoELG/EPA/GSI, 1999). The groundwater protection responses are a means of ensuring that

aquifer is a Poor aquifer (and not an aquitard as asserted in the licence application) and is not providing natural protection for the underlying Loughshinny aquifer (locally important aquifer). The applicant argues that the response matrix should be applied to this Poor aquifer instead of the locally important aquifer beneath, which would give a response score of R2<sup>2</sup>. The conditions for R2<sup>2</sup> are:

*Acceptable subject to guidance outlined in the EPA Landfill Design Manual or conditions of a waste licence.*

- *Special attention should be given to checking for the presence of high permeability zones. If such zones are present then the landfill should only be allowed if it can be proven that the risk of leachate movement to these zones is insignificant. Special attention must be given to existing wells down-gradient of the site and to the projected future development of the aquifer.*

- *Groundwater control measures such as cut-off walls or interceptor drains may be necessary to control high water table or the head of leachate may be required to be maintained at a level lower than the water table depending on site conditions.*

The applicant thus argues that this alternative use of the response matrix indicates it is inappropriate to rely on generic assessment matrices when site-specific investigations and assessments have been undertaken.

#### Technical Committee's Evaluation:

The response matrix is a screening tool, which was developed for non-hazardous waste landfills rather than hazardous waste landfills, and while the specific recommendations may not apply, the principles included in the response matrix recommendations do apply. Furthermore, the principle would apply to any site where site specific data are available. In this case, if one were to consider the Namurian aquifer (and a response category of R2<sup>2</sup>), then the questions asked by the two bullet points under the R2<sup>2</sup> response matrix detailed above would need to be satisfied prior to concluding that a landfill at this location would be likely to be acceptable.

The TC believe that to consider the Namurian aquifer beneath the site as a uniform, extensive and homogenous aquitard which precludes the need for consideration of the Loughshinny aquifer is not an appropriate approach given the level of potential risk the hazardous landfill could pose for a protracted period.

In order to prove the Namurian aquifer was indeed an aquitard there would need to be extensive data showing there is little or no correlation between the water levels or response to pumping in the Namurian and Loughshinny aquifers. The available data on water levels presented to date do not support this.

The dominant control on the permeability of Irish Aquifers is the secondary (fracture-related) porosity and not the primary (intragranular) porosity much of which has been destroyed due to compaction and low level metamorphism, and there is no data to the contrary presented for this case. Given this fact, the variation in the

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good environmental practices are followed. The levels of response to the risk (i.e., the response category) range from R1 (acceptable subject to normal good practice) to R4 (not acceptable).

Category R3<sup>2</sup> of the Response Matrix indicates the proposed development at the proposed site is:

Not generally acceptable, unless it can be shown that:

- there is a minimum consistent thickness of 3 metres of low permeability subsoil present;
- there will be no significant impact on the groundwater; and
- it is not practicable to find a site in a lower risk area.

lithology is not the dominant influence on the permeability in zones which have been subject to extensive structural deformation. Given the concentration of lithological boundaries and faulting (and secondary jointing) in the proposed site location it would be very difficult to demonstrate that the Namurian lithology was in fact an aquitard.

Given that the Loughshinny Formation actually outcrops on the same site (while not directly beneath the proposed footprint) requires that a conservative approach to any generic assessment be taken. Notwithstanding the generic nature of the response matrix, it is the opinion of the TC that the evidence presented on a site specific basis does not support the contention that the Naumurian Aquifer is an aquitard and therefore due attention must be given to the protection of the Loughshinny Lm aquifer<sup>2</sup>.

**Recommendation:** No change.

## A.2. Landfill Directive

The applicant considers that the requirements of the Landfill Directive supersede those of the Groundwater Protection Response for Landfills document referred to above, because the document predates the Directive.

In addition the applicant disputes the Agency's interpretation of Section 3.2 of Annex I of the Landfill Directive dealing with the protection of soil and groundwater. Section 3.2 of Annex I of the Landfill Directive states:

*The geological barrier is determined by geological and hydrogeological conditions below and in the vicinity of a landfill site providing sufficient attenuation capacity to prevent a potential risk to soil and groundwater.*

*The landfill base and sides shall consist of a mineral layer which satisfies permeability and thickness requirements with a combined effect in terms of protection of soil, groundwater and surface water at least equivalent to the one resulting from the following requirements:*

- landfill for hazardous waste:  $K \leq 1,0 \times 10^{-9} \text{ m/s}^3$ ; thickness  $\geq 5 \text{ m}$ ,
- landfill for non-hazardous waste:  $K \leq 1,0 \times 10^{-9} \text{ m/s}$ ; thickness  $\geq 1 \text{ m}$ ,
- landfill for inert waste:  $K \leq 1,0 \times 10^{-7} \text{ m/s}$ ; thickness  $\geq 1 \text{ m}$ ,

*Where the geological barrier does not naturally meet the above conditions it can be completed artificially and reinforced by other means giving equivalent protection. An artificially established geological barrier should be no less than 0,5 metres thick.*

The interpretation of Section 3.2 of Annex I included in the Inspector's Report (IR) was that a geological barrier could be completed artificially and reinforced by other means, but not completely replaced by an artificial construction. MEHL has proposed an entirely artificial geological barrier, as there is no naturally occurring mineral layer.

<sup>2</sup> Locally important aquifers (L) - Bedrock which is Generally Moderately Productive (Lm).

<sup>3</sup> m/s: meter/second.

MEHL emphasise the section “...it can be completed artificially and reinforced by other means giving equivalent protection.” and argue that where the geological barrier does not meet the specific requirements in terms of permeability and thickness, it can be completed artificially and reinforced by other means giving the equivalent protection subject to the requirement that such artificially established geological barrier should be not less than 0.5 meters thick.

#### Technical Committee’s Evaluation:

##### 1. Landfill Directive and the Groundwater Protection Response matrix.

The Groundwater Protection Response matrix for Landfills is a screening tool to screen out sites unsuitable for landfills, further investigations are carried out to confirm the suitability of those sites not screened out. The Landfill Directive is the primary European legislation governing the landfilling of waste and must be complied with. The Directive identifies the minimum standards that are required for operating landfills so they do not cause pollution.

##### 2. Section 3.2 of Landfill Directive

The Landfill Directive requires the geological barrier (including where barrier is completed artificially and reinforced) to provide sufficient attenuation capacity to prevent a potential risk to soil and groundwater pollution.

The barrier protection must be at least equivalent to the combination of permeability and thickness specified in the Directive, but will need to provide equivalent geotechnical protection as well as hydrogeological protection. The protection afforded by the geological barrier is primarily a function of its permeability and thickness; however the mechanical behavior of the barrier in the long term is also a key controlling factor in its performance. While it can be mathematically demonstrated that a thin layer (0.5m) of very low permeability material ( $10^{-10}$  m/s) provides the same travel time as a thicker layer (5.0m) of low permeability material ( $10^{-9}$  m/s), the margin for error between 0.5m of a barrier used versus 5m of barrier is an important consideration. In spite of quality assurance, the consequence of a 100mm layer being defective in a 0.5m barrier versus a defect in a 100mm layer in a 5.0m barrier must be borne in mind. Furthermore, the geotechnical behavior of a layer  $1/10^{\text{th}}$  the thickness of a 5.0 m layer must also be borne in mind; with the latter providing a margin of error for any movement of formation beneath, over the very long timescales during which the liner is expected to perform.

To place a liner on an aquifer in the absence of any natural geological formation would not appear to be what was intended in the Directive; and while this may be a matter of interpretation of the Directive, the TC considers that it is open to it to comment directly on the wisdom of applying this methodology at this site given the available data.

Given the complex nature of the hydrogeology, the variety of lithologies, faults and associated joints beneath the proposed hazardous waste landfill the TC does not believe it can be demonstrated with any degree of certainty that a geological barrier constructed entirely artificially (albeit to engineering standards) can be said to offer the level of protection afforded by a site with less complex geology and naturally



occurring geological barrier which may or may not need to be completed to the standard set out in the Directive. The absence of any natural geological barrier at the site gives rise to concerns which the data provided to date cannot assuage.

In view of the above comments the "completion" and "reinforcement" of the geological barrier proposed would not appear to provide the same performance with respect to both geotechnical and hydrogeological protection as the standards included in the Directive.

**Recommendation:** No change.

### **A.3. Rising Groundwater Levels**

The applicant considers the Agency has misinterpreted the groundwater level patterns at the MEHL site and therefore inaccurately considered the risk to the dense asphaltic concrete (DAC) liner.

MEHL considers that the Agency inferred that groundwater levels at the MEHL site and the Bog of the Ring have tracked each other from 2003 to date. The applicant considers, however, that (1) the MEHL site is outside the zone of contribution (ZOC) for the Bog of the Ring water supply and (2) groundwater at the MEHL site in recent years has been dominated by dewatering and the cessation of dewatering at the licensed site.

The applicant references studies outlined in its Article 16 response investigating the Bog of the Ring abstraction and its ZOC, stating that they have clearly determined its boundaries. The applicant states that the MEHL site and the Bog of the Ring groundwater catchments have been proved to be separate and states that cessation of pumping at the Bog of the Ring will only increase groundwater levels within its defined ZOC.

The applicant also states that the presence of a groundwater divide between the groundwater catchments in which the MEHL site and the Bog of the Ring site lie, was accepted by the Agency when a waste licence was granted for the Tooman Nevitt site (Reg. No. W0231-01 for a non-hazardous waste landfill) – the applicant states the Tooman Nevitt site lies within the same groundwater catchment as the Bog of the Ring and is closer to it than the MEHL site is.

The applicant also states there is confusion in the understanding of the influence of pumping (and cessation of pumping) at the MEHL site and the influence of pumping (and cessation of pumping) at the Bog of the Ring site on the groundwater levels at the MEHL site. The applicant states that groundwater level monitoring data is available from the MEHL site from 1999 to present. In particular it states that during the early part of this time period, pumping of groundwater (dewatering) began intermittently in both the north and south of the MEHL site and groundwater levels were observed to decline during this period.

The applicant also states that in late 2006 pumping in the north of the site ceased and pumping only continued in the south of the site, where it continued until May 2009. The applicant states that, as a result, groundwater levels were observed to rise from 2006 and has continued to rise as dewatering ceased completely since 2009. Accordingly, the applicant states that groundwater levels cannot be correlated in any way with changes in abstraction rates at the Bog of the Ring.



The applicant argues that groundwater monitoring data from the period 2012-2014 demonstrates groundwater levels at the MEHL site have stabilised far below the design formation level of 104.5mOD and thus rising groundwater levels do not pose a risk to the DAC liner.

#### Technical Committee's Evaluation:

The TC acknowledge that it is understandable that different interpretations (what the applicant refers to as "confusion") should arise given the highly complex nature of the hydrogeology in the area, the complex pumping arrangements and the lack of adequate data to untangle these issues. In short, the complex hydrogeology of this site and the lack of data to back up the proposed conceptual site model rule it out as a suitable site to consider as a hazardous waste landfill and the TC find it surprising that this was not identified by the applicant at a screening/site selection stage for the project. The key areas of concern are;

- The applicant has not adequately demonstrated the level of connection or lack of same between the Namurian and underlying Loughshinny formation.
- The nature of the faults beneath the site as barriers to flow or as conduits for flow has not been adequately clarified.
- The possibility that groundwater levels could rebound to the level of the geological barrier and negate the level of protection it is designed to provide. (See Appendix 2 for groundwater hydrographs at the MEHL site included in the Geosyntec report that supported the Inspector's Report, as well as Appendix 3 for geological cross sections of the site in its current state and Appendix 4 for a conceptual site model for the proposed development, both of which were included in the applicant's response to the Article 16 Notice).

Given the level of pumping at the site and how this has varied over time, there is no quality data available that conclusively shows there is no connection between the groundwater levels at the site and the pumping operations at the Bog of The Ring. The lack of any quality data set or monitoring boreholes to the north of the site is a significant deficiency in the characterisation of the hydrogeology; were such data available they could have provided not only information on the current location of the ZOC of the Bog of the Ring but data regarding any relationship between the pumping at the site and the wider environs including the ZOC of the Bog of the Ring.

There has been an over-reliance in the application on the 2005 delineation of the Zone of Contribution to the Bog of the Ring public water supply and this is discussed below.

#### ***Bog of the Ring Groundwater Source Protection Zones, Hunter-Williams, T., 2005***

The application has relied heavily on the delineation of the ZOC of the Bog of the Ring drinking water supply source by the Geological Survey of Ireland (GSI). The applicant's contention is that their proposed development will not impact on the ZOC. It is worth taking some time to put the GSI report in context and emphasising that the ZOC is not a statically defined zone, outside which no consideration is to be given to the resources within the ZOC. The delineation of any ZOC is problematic due to variations in rock type, topography, hydraulic gradients, permeability, abstraction rates, etc.; however it is a very worthwhile exercise to undertake to assist policy makers and land-use managers to best protect drinking water resources. The delineation is not a precise exercise, nor is it an exercise that can be completed on a once off basis and never revisited. Where topography and geology are complex as in

the case of the Bog of the Ring it can be especially problematic. Note the following statements from the GSI report:

*"the available hydrogeological information does not allow for a definitive understanding of the hydrogeology". Section 7.7 P. 28*

*"It was not the intention of the modelling exercise to reproduce exactly the groundwater system, but rather that it would give a 'broad picture' of the hydrogeology of the area". Section 7.8 p. 30*

*"Note that the location of the divide is indicated by modelling (see sections 7.8.3 and 7.8.4) to move southwards due to pumping". Section 7.8.1 p. 30*

*"The predicted boundaries cannot be taken as definitive; neither the available data nor the conceptual model on which the numerical model is based nor the model grid allow precise delineation of the ZOC boundaries. However, the numerical modelling provides useful guidance on the groundwater flow regime in the area. It highlights the importance of the high transmissivity zones and the sensitivity of the aquifer to abstraction rate.*

*The model predictions indicate the need for further assessment of the available groundwater resources in this aquifer, prior to decisions on increasing the abstraction beyond 3,500 m<sup>3</sup>/d."*

The report also states that the southern boundary of the ZOC is *"delineated using topography and numerical modelling"* and the southern boundary of the ZOC *"allows for some flow that may get to wells, particularly toward the boundary with the limestones"* <sup>4</sup>.

The rate of pumping at the Bog of the Ring is a key factor in the size of the ZOC, with the classic formula used to conceptualise this being:

$$Q=RA$$

Q = Pumping rate (m<sup>3</sup>/annum)

R = Recharge in (m/annum)

A = Area of the zone of contribution (m<sup>2</sup>).

On average *recharge* will vary little, however the area required for the ZOC will increase in proportion to the rate of abstraction. Thus the GSI report cautions several times that this will be the case and demonstrates by numerical modelling, by varying the pumping rate, that the ZOC increases in size and migrates southwards (it is noted that the applicant's site is to the south of the ZOC) as demonstrated by model runs (from baseline of 3,500 m<sup>3</sup>/day up to 4,000 m<sup>3</sup>/day and 5,000 m<sup>3</sup>/day).

Averaged pumping rates have been up as high as 3,000 m<sup>3</sup>/day in 2013 but have reduced to 2,600 m<sup>3</sup>/day in 2014 (data available from Office of Environmental Assessment (OEA)). However it must be borne in mind that any future expansion of the Bog of the Ring Scheme above 3,500 m<sup>3</sup>/day would require additional assessment as specified by the GSI report. It must therefore be borne in mind that the proposed development could effectively "sterilise" the future development of the Bog of the Ring drinking water source (albeit this would itself be subject to formal consents).

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<sup>4</sup> It is noted that Figure 7 of the GSI report shows the southern boundary as "NO FLOW" and this is a requirement to make the numerical model function in its simplified version of reality, but is not a true reflection of the actual hydrogeology.

With regards to the Tooman Nevitt licence application (Reg. No. W0231-01), the TC has restricted its consideration of the technical matters to those presented by the applicant with regard to the applicant's own site and the potential impacts it may have on the environment and the TC does not propose to revisit the previous decision taken by the Agency.

**Recommendation:** No change.

#### **A.4. Potential impact on Bog of the Ring water supply**

The applicant considers the Agency has mistakenly linked the groundwater levels at the site with those at the Bog of the Ring. The applicant states that it had previously demonstrated in its response to the Agency's Article 16 notice that groundwater levels at the site and the Bog of the Ring are not hydro geologically connected and states the same was the case for the Tooman Nevitt site.

The applicant states that the Agency did not provide clarity in its licence determination as to why it interpreted the situation at the MEHL site differently to that of the interpretation of the Tooman Nevitt case where, according to MEHL, faulting and extensive gravel deposits also exists.

The applicant quotes the Inspector's report for the Tooman Nevitt oral hearing

*With respect to faults, and their likely extent in the vicinity of the landfill, it is worth pointing out here that the EPA 2006 document 'Landfill Manuals: Manual on Site Selection (Draft for Consultation)' states that 'In locating areas suitable for landfill, it is difficult to avoid being on, or close to geological faults'. Even though the majority of faults increase the permeability of the bedrock in the fault zone it would normally not be appropriate to rule out or downgrade a site because of the presence of faults' and that 'It is recommended that there should be no general prohibition of landfill siting on areas with geological faults.*

The applicant considers the Agency should provide the same considerations at the MEHL site as it does to the Tooman Nevitt site.

#### Technical Committee's Evaluation:

See response to A.3

**Recommendation:** No change.

#### **A.5. Landsim**

The applicant is concerned that information submitted using the Landsim model was not considered by the Agency in its determination. The applicant states that in its response to the Agency's Article 16 Notice, it justified that the use of Landsim was appropriate and also provided detailed answers to other questions the Agency had asked about the use of Landsim. The applicant continues by stating that it appeared, in the Agency's determination documents, that neither the Landsim modelling nor the responses provided to the other related questions included in the Article 16 Notice were assessed, on the basis of the site's complexity. The applicant quotes the Geosyntec report [documentation which supported the Inspector's Report that is associated with the PD] to support the position that the complexity of the site was the reason that the Landsim modelling work was not included in the assessment of

the licence application. The Geosyntec report, considered the applicant's response to the Article 16 Notice, which was received by the Agency 18<sup>th</sup> October 2013. The Geosyntec report was finalised in June 2014.

Technical Committee's Evaluation:

Given the complexity of the hydrogeology (as outlined in Section A.3) and lack of a clear conceptual model or reliable quality data-set on which to base a model, the TC believes that any attempt to numerically model the scenario is without merit. It is noted the limitations that the GSI experienced in their attempt to numerically model the abstractions at the Bog of the Ring and numerous caveats and uncertainties which they have outlined in their ZOC report. The consequences of relying on a potentially flawed model to aid decision making in the case of a hazard that will remain for a protracted timeframe (far beyond that of, for example a non-hazardous waste landfill) is not, in the opinion of the TC advisable.

**Recommendation:** No change.

As the Technical Committee, having looked at all the points above, is recommending the Agency maintains its determination to refuse a licence on the basis of matters related to hydrogeology and the application of the Landfill Directive, it has not pursued the applicant for financial provision. Accordingly this report does not consider aspects related to fit and proper person.

## Third Party Objections

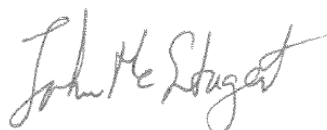
There were no third party objections.

### Overall Recommendation

It is recommended that the Board of the Agency refuse to grant a licence to the applicant

- (i) for the reasons outlined in the proposed determination and  
and
- (ii) the reasons outlined in this report.

Signed



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John McEntagart

for and on behalf of the Technical Committee

## **Appendix I**

### Section 83(5) of the Environmental Protection Agency Act 1992 as amended

(5) The Agency shall not grant a licence or revised licence for an activity-

(a) unless it is satisfied that-

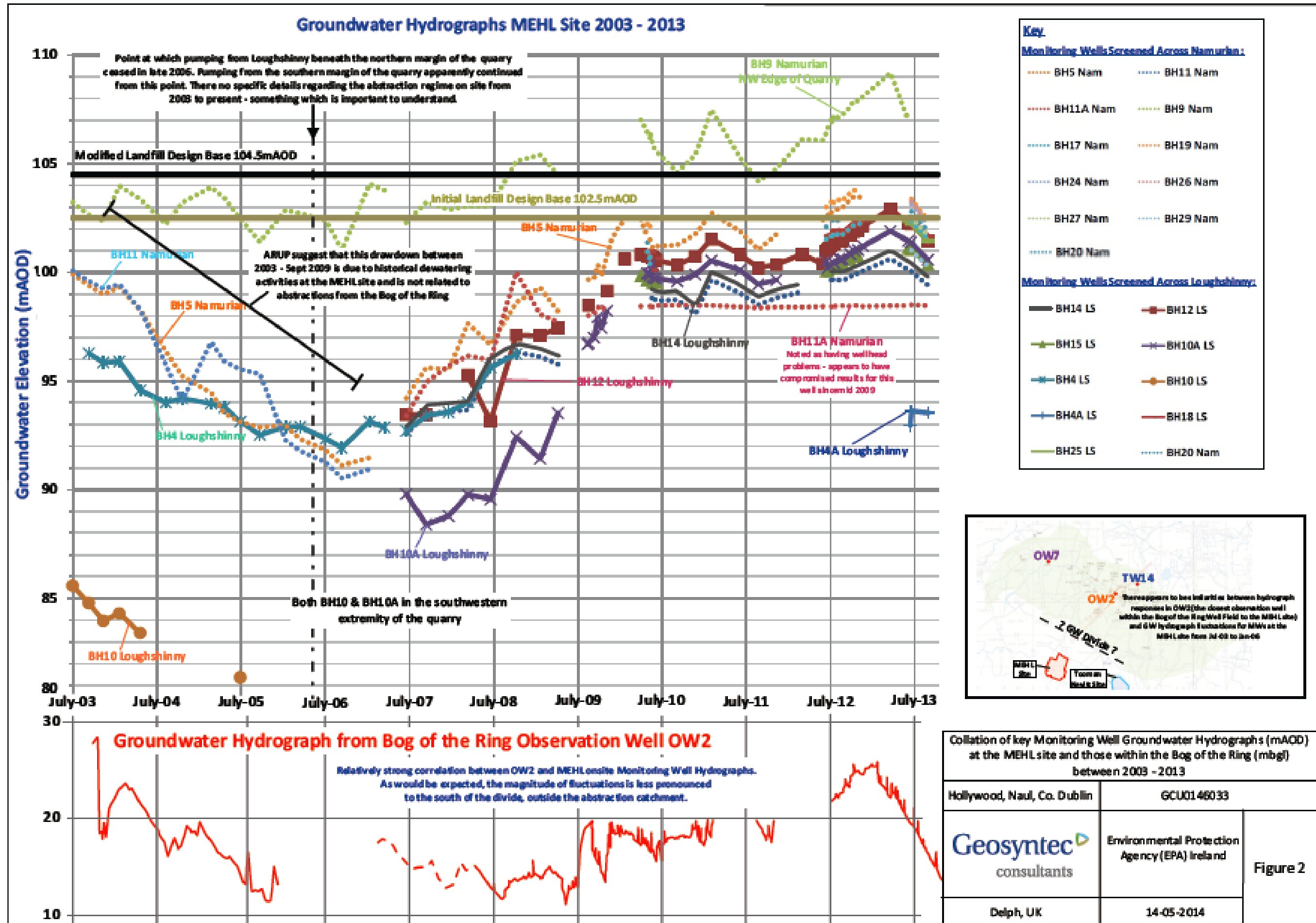
- (i) any emissions from the activity will not result in the contravention of any relevant air quality standard specified under section 50 of the Air Pollution Act 1987, and will comply with any relevant emission limit value specified under section 51 of the Air Pollution Act 1987,
- (ii) any emissions from the activity will comply with, or will not result in the contravention of, any relevant quality standard for waters, trade effluents and sewage effluents and standards in relation to treatment of such effluents prescribed under section 26 of the Local Government (Water Pollution) Act 1977,
- (iii) any emissions from the activity or any premises, plant, methods, processes, operating procedures or other factors which affect such emissions will comply with, or will not result in the contravention of, any relevant standard including any standard for an environmental medium prescribed under regulations made under the European Communities Act 1972, or under any other enactment,
- (iv) any noise from the activity will comply with, or will not result in the contravention of, any regulations under section 106,
- (v) any emissions from the activity will not cause significant environmental pollution,
- (vi) the best available techniques will be used to prevent or eliminate or, where that is not practicable, generally to reduce an emission from the activity,
- (vii) having regard to Part III of the Act of 1996, production of waste in the carrying on of the activity will be prevented or minimised or, where waste is produced, it will be recovered or, where that is not technically or economically possible, disposed of in a manner which will prevent or minimise any impact on the environment,
- (vii*a*) without prejudice to subparagraph (vii), waste generated in the carrying on of an industrial emissions directive activity, in order of priority in accordance with section 21A (inserted by Regulation 7 of the European Communities (Waste Directive) Regulations 2011) of the Act of 1996, will be prepared for re-use, recycled, recovered or, where that is not technically or economically possible, disposed of in a manner which will prevent or minimise any impact on the environment,
- (viii) energy will be used efficiently in the carrying on of the activity,
- (ix) necessary measures will be taken to prevent accidents in the carrying on of the activity and, where an accident occurs, to limit its

consequences for the environment and, in so far as it does have such consequences, to remedy those consequences,

- (x) necessary measures will be taken upon the permanent cessation of the activity (including such a cessation resulting from the abandonment of the activity) to avoid any risk of environmental pollution and return the site of the activity to a satisfactory state, and
- (xa) in the case of an industrial emissions directive activity, necessary measures referred to in subparagraph (x) including measures of appropriate duration shall be taken in accordance with section 86B,
- (xi) the applicant or licensee or transferee, as the case may be, is a fit and proper person to hold a licence, and, where appropriate, the Agency shall attach conditions relating to the matters specified in the foregoing subparagraphs to the licence or revised licence,

and

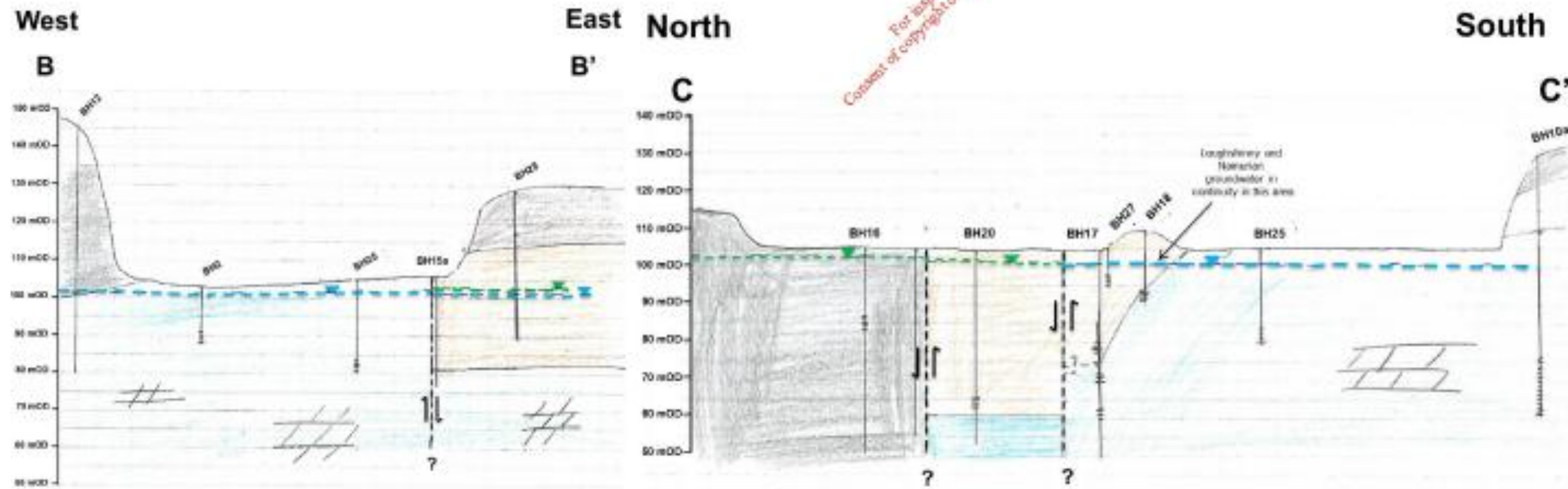
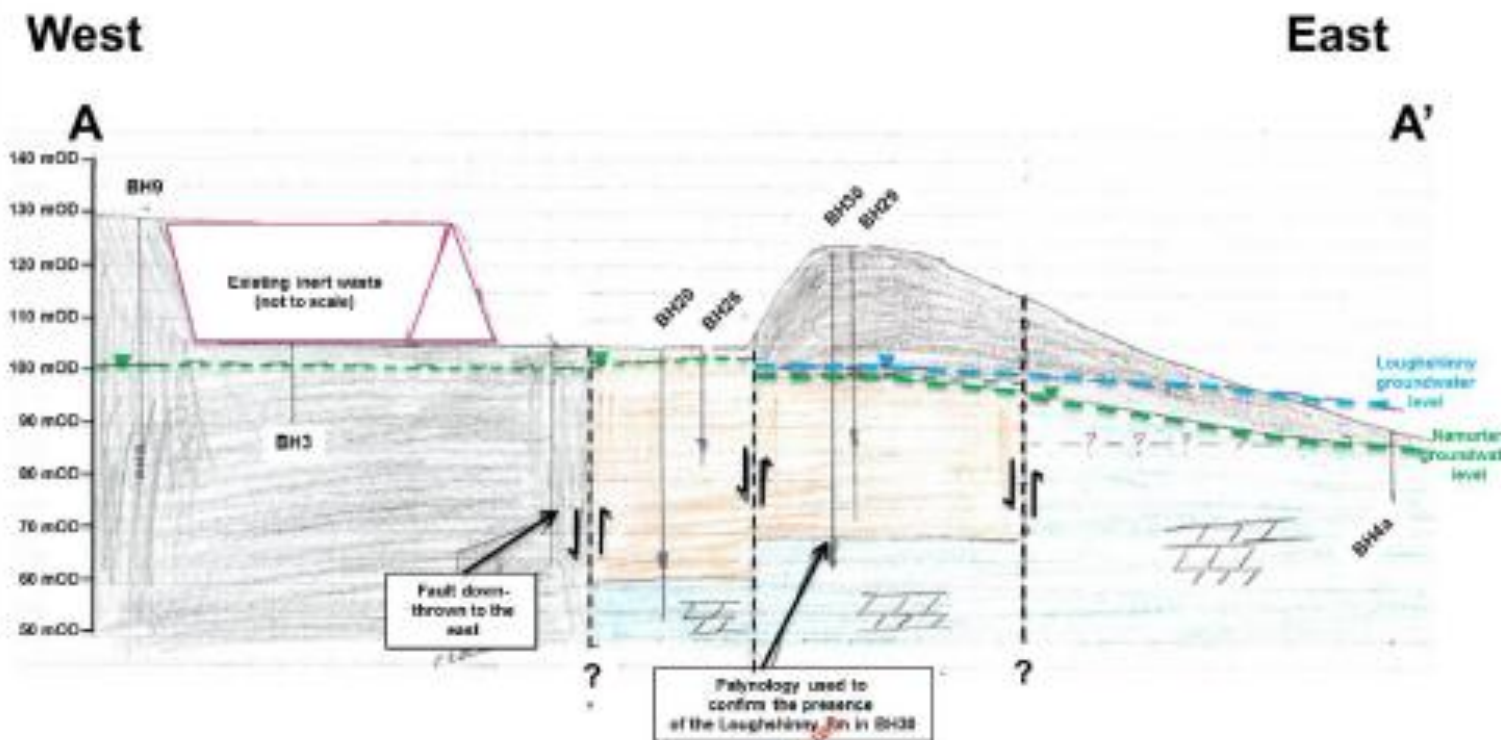
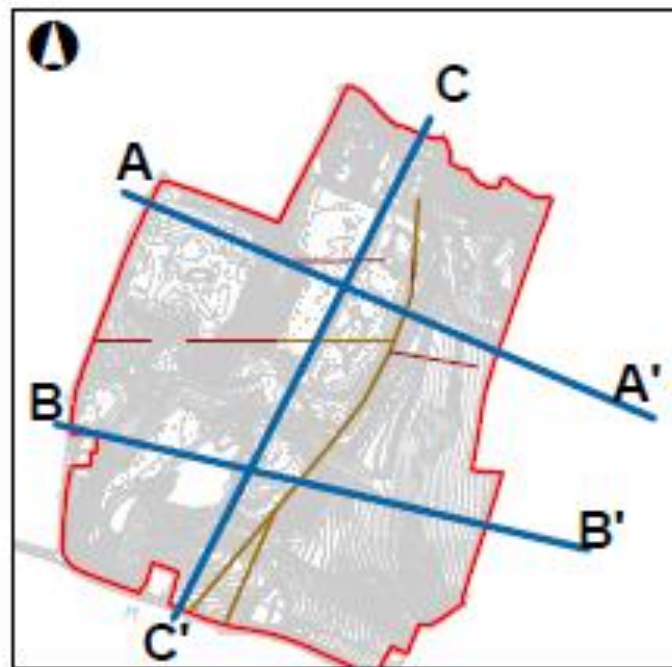
- (b) where an environmental quality standard requires stricter conditions to be attached to the licence or revised licence than would otherwise be determined by reference to best available techniques either-
  - (i) without attaching to the licence or revised licence conditions of an appropriate kind for the purpose of that standard, or
  - (ii) where-
    - (I) the proposed licensee or the licensee proposes, for the purpose of that standard, to take steps that are different from those that would be required by the imposition of conditions under subparagraph (i), and
    - (II) the Agency is satisfied that those steps, or those steps with such modifications of them as it considers appropriate, are appropriate for the purpose of that standard, without attaching conditions to the licence or revised licence requiring those steps, or those steps as so modified, to be taken.





Appendix 3 Geological cross sections of MEHL site

A3



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**Legend**

- MEHL Proposed Plant and Waste Licence Boundary
- Possible Fault/Structure
- Possible Fault/Contact
- Cross section location

**Key:**

- Boulder clay
- Walshstown Formation
- Baticard Formation
- Loughshinny Formation
- Faulting
- Namurian groundwater levels
- Loughshinny groundwater levels

Cross sections not to scale.  
Approximate vertical scale: 1:100  
Approximate horizontal scale: 1:3,500

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Scale  
0 20 40 Meters

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Client  
**MEHL**

Job Title  
**EPA Waste Licence Application W0129-03.  
Response to EPA Article 16: Groundwater**

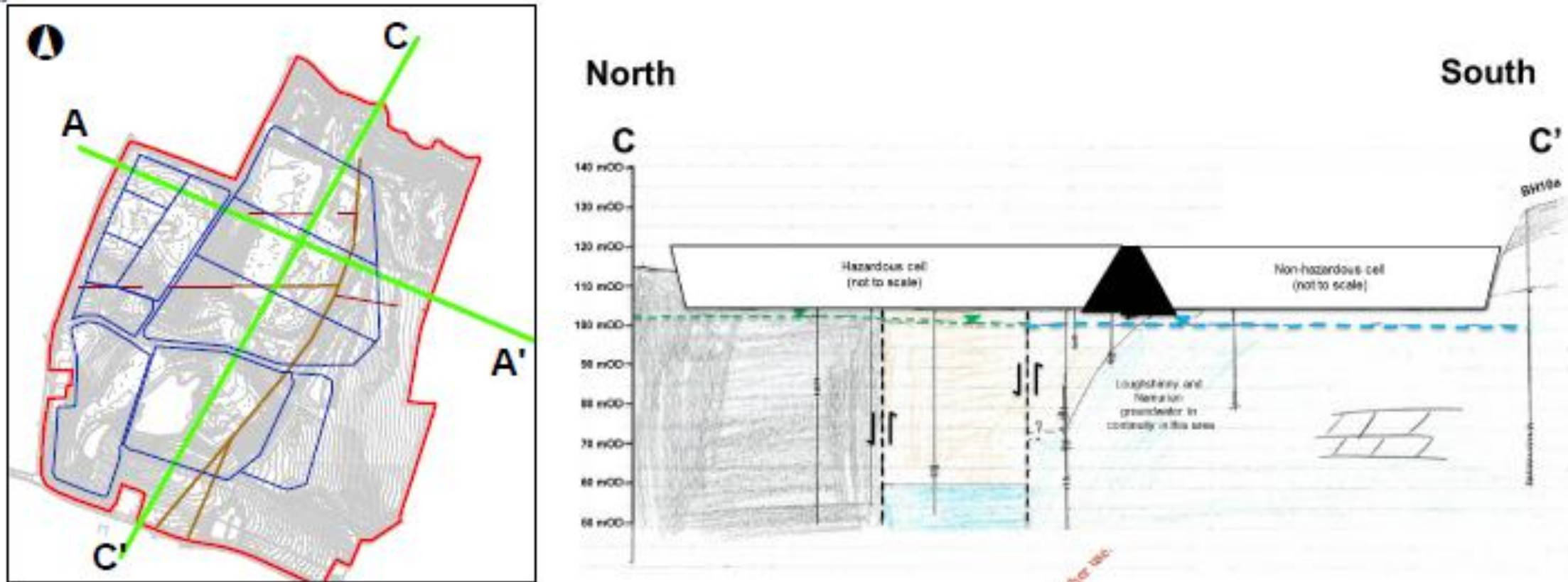
Figure 7.  
Geological cross sections

Scale as A3  
**1:10,000**

Job No. <b>325877.30</b>	Drawing Status <b>Final</b>
Drawing No. <b>007</b>	Issue <b>P1</b>



Appendix 4 Conceptual site model for proposed development



- Legend**
- WML, Proposed Planning and Waste Licence Boundary
  - Possible Fault/Fracture
  - Possible Contact
  - Waste cell layout
  - CRM location

- Key:**
- Boulder clay
  - Washstown Formation
  - Strickard Formation
  - Loughshinny Formation
  - Faulting
  - Namurian groundwater levels
  - Loughshinny groundwater levels
- Cross sections not to scale.  
 Approximate vertical scale: 1:100  
 Approximate horizontal scale: 1:3,500

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 Response to EPA Article 16: Groundwater

Figure 8.  
 Conceptual site model

Scale of A3  
 1:3,000

Job No  
 325877.30

Drawing Status  
 Final

Drawing No  
 008

Issue  
 P1

