Technical Note to Inspector

ABP-321405-24

Development	Construction of a dwelling house, wastewater treatment system and all associated site works
Location	Cregg, Glandore, Co. Cork
Planning Authority	Cork County Council
Planning Authority Reg. Ref.	24112
Applicant(s)	Orla Hickey
Appellant(s)	Ann Deasy & Mark Foley
Type of Application	Normal Planning Appeal
Inspector	Aisling Mac Namara
Scientist	Finbarr Quigley

Contents

1.0 Scope of Report

1.1.1. This note to the Inspector and available to the Commission is a written record of my review and examination of the submitted information provided by the applicant as it relates to certain environmental concerns around the development. In my capacity of Inspectorate Environmental Scientist, I have the relevant expertise to provide a professional opinion as to the adequacy of the information for the Inspector and the Commission to undertake a decision.

1.1.2. I have been requested to provide an opinion on the following aspects of the project:

- Whether or not the presence of imported made ground impacts a sites suitability for on-site wastewater treatment systems and on-site disposal of surface water,
- consider the technical information presented by both parties and to consider if the proposal complies with EPA CoP with particular emphasis on the potential for impacts on adjoining property's well

For the purpose of this technical note, I have reviewed the following documentation and reference material:

- The GSI Groundwater Data viewer www.gsi.geodata.gov.ie
- Code of Practice for Domestic Wastewater Treatment Systems (p.e. <10), EPA 2021
- The appeal documentation

2.0 Issues examined and suggestions for consideration

2.1. Presence of imported soil material

2.1.1. In a cover letter to the PA (received 11th March 2024) accompanying the site suitability assessment, the agent for the applicant stated that site improvement works in accordance with Section 6.7 of the EPA Code of Practice (CoP) 2021 were carried out prior to the percolation tests carried out in December 2022. There were no details provided of the nature of the site improvement works carried out.

2.1.2. The PA Area Engineers report dated the 24th April 2024 expressed concerns that the percolation tests were performed on infill ground and were not a true indication of existing virgin ground conditions. This report also contained no information on the type of 'infill' material imported. The report requested that further information be sought from the applicant including an engineers report detailing the ground conditions to ensure that no contamination of neighbouring wells would occur. The report also sought clarification as to whether the percolation tests were carried out on imported material or on 'virgin ground'.

2.1.3. In a response to the RFI, the applicant reported that the site suitability tests were carried out on both in-fill and original virgin ground in accordance with Section 6.7 of the CoP. The applicant stated that in accordance with Section 6.7 of the CoP, site improvement works were carried out in the year prior to the percolation tests of December 2022. According to the applicant, these works were carried out to achieve the required separation distances from the expected water table level and the expected bedrock level. This suggests that the applicant was aware that the site may have had unfavourable conditions for on-site wastewater treatment. However, no evidence of percolation testing, trial hole logs etc in relation to the site prior to the importation of the infill material were provided.

2.1.4. The applicant stated that the subsurface percolation tests carried out in December 2022 were performed in test holes 700mm, 800mm and 900mm below the existing ground level and within the original virgin subsoil horizon of the site. The report stated that these holes is c. 500mm to 300mm above the mottling level evident within the trial hole. This will be discussed below.

2.1.5. The trial hole photographs submitted with the site suitability assessment (SSA) appeared to show a clear delineation between the imported fill material and the existing ground (see figures 2.1 and 2.2). The existing ground was a dark grey/blue coloured subsoil whereas the imported material above the existing ground appeared to be a brown coloured soil with smearing evident which suggested a high CLAY content. The trial hole log (Section 3.2) did not record the distinction between the infill material and the previous existing ground level. The assessor should have recorded this information. The trial hole log and photographs suggested that approximately 1m of infill material existed above the previous ground level and that the existing soil/subsoil consisted of a shallow (<0.7m) layer of subsoil above

fractured bedrock. Bedrock was encountered at 1.7m bgl and mottling was observed at 1.2m bgl which suggested the in-situ soils were shallow and wet with less than 0.2m of unsaturated soils present. The GSI mapped data for the site suggested that bedrock was present at or near the surface and had no subsoils mapped for the area due to bedrock being present at the surface.

Figure 2.1 Photograph of the trial hole with evidence of the existing ground and imported material

Figure 2.2 Photograph of the trial hole with evidence of the existing ground and imported material

2.1.6. The SSA also contained photographs of the subsurface percolation test holes which were identified as SS1, SS2 and SS3 with blue spray-paint alongside the holes. Based on the colour of the soil in these photographs these test holes were not carried out in the existing ground but were carried out in the imported infill material (see figures 2.3, 2.4 and 2.5 for reference).

Figure 2.3 Photograph of the subsurface percolation test hole SS1 carried out in the imported infill material

Figure 2.4 Photograph of the subsurface percolation test hole SS2 carried out in the imported infill material

Figure 2.5 Photograph of the subsurface percolation test hole SS3 carried out in the imported infill material

2.1.7. In conclusion, from the evidence provided with the SSA and the RFI response, an unknown volume of soil was imported onto the site and the trial hole and percolation tests were carried out within this material and not within the original ground. What is unclear is the volume, source and nature (variability) of the soil imported onto the site. While the trial hole log showed that at least 1m of imported soil existed at that location, the site was originally sloped which suggested that the depth of imported material could vary across the site with potentially shallower depths of imported material on the uphill side. This uncertainty is of concern given the presence of bedrock close to the original ground level and the presence of a watercourse to the south of the proposed polishing filter which flows directly into the sea <150m from the boundary of the site. The uncertainty over depth to water table suggests there may be parts of the proposed polishing filter with insufficient depth of unsaturated soils.

2.2. Site suitability assessment and the reliability of the conclusions

2.2.1. The site suitability assessment was carried in accordance with the requirements of the 2021 Code of Practice (CoP). A trial hole was excavated in an area of imported material which demonstrated that at the selected location the soil profile consisted of

1m of imported soil, 0.7m of original soil and bedrock below that. Mottling was noted at 1.2m bgl which suggested that the original ground had 200mm of unsaturated soil.

2.2.2. The soil/subsoil was classified as a gravelly SILT/CLAY however the threads and ribbons data provided suggested the soil should have been classed as a CLAY. The photographs of the trial hole had evidence of smearing from the excavator bucket which is strongly indicative of high CLAY content soils.

2.2.3. CLAY soils usually have percolation values >41 (Table 5.2 CoP 2021). Subsurface percolation tests were carried out at 700mm, 800mm and 900mm bgl within the imported soil. The 3 reported PV values were 22.9, 24.0 and 12.3 respectively with an average value of 19.8 which is considered to be a low value given the plasticity and dilatancy data provided in Section 3.2. Given that the infill material was imported to the site within the previous year, there are concerns that the soil had not settled and compacted sufficiently to allow a representative percolation value to be assessed.

2.2.4. Surface percolation tests were carried out within the imported soil. The 3 reported PV values were 13.3, 19.1 and 17.8 with an average value of 16.7 which is considered to be a low value given the plasticity and dilatancy data provided in Section 3.2. Given that the infill material was imported to the site within the previous year, there are concerns that the soil had not settled and compacted sufficiently to allow a representative surface percolation value to be assessed.

2.2.5. Sections 5.0 and 6.0 of the SSA should clearly outline the proposal for treating the wastewater arising on site. Section 5.0 of the SSA submitted stated that the applicant proposed to install a packaged tertiary treatment system and infiltration area/polishing filter. Tertiary treatment is applied to wastewater already treated in a secondary system, but no details of the type of secondary treatment system proposed was included in Section 6.0. The proposal is that wastewater from an unspecified tertiary treatment system would be discharged into a soil polishing filter which has been sized at 45m^2. This sizing is dependent on the surface and subsurface percolation values calculated as part of the SSA in accordance with option 2 of Table 10.1 of the CoP, 2021.

2.2.6. In conclusion, the percolation tests were performed in imported soil which had been in-situ for a relatively short period of time and the percolation values obtained were

questionable given the lack of settlement and compaction which would have taken place in the short time it was present on site. The consistency of depth of imported soil over the site is also unclear which raised concerns regarding the confidence that an adequate depth of unsaturated soil above the water table and bedrock could be achieved. The proposed secondary and tertiary components of the proposal to treat wastewaters arising have not been clearly defined. Given the above concerns, I do not believe the CoP, 2021 has been complied with in full and as such permission for this proposal should not be granted.

2.3. Appropriate separation distances from neighbouring wells?

2.3.1. The minimum separation distances as outlined in Table 6.2 of the CoP can be achieved for all identified features which relate to this site. In particular, the downgradient domestic well distance of 45m is achievable from this location.

Figure 2.6 Groundwater flow direction and approx. location of neighbouring well (red) and proposed WWTP (yellow)

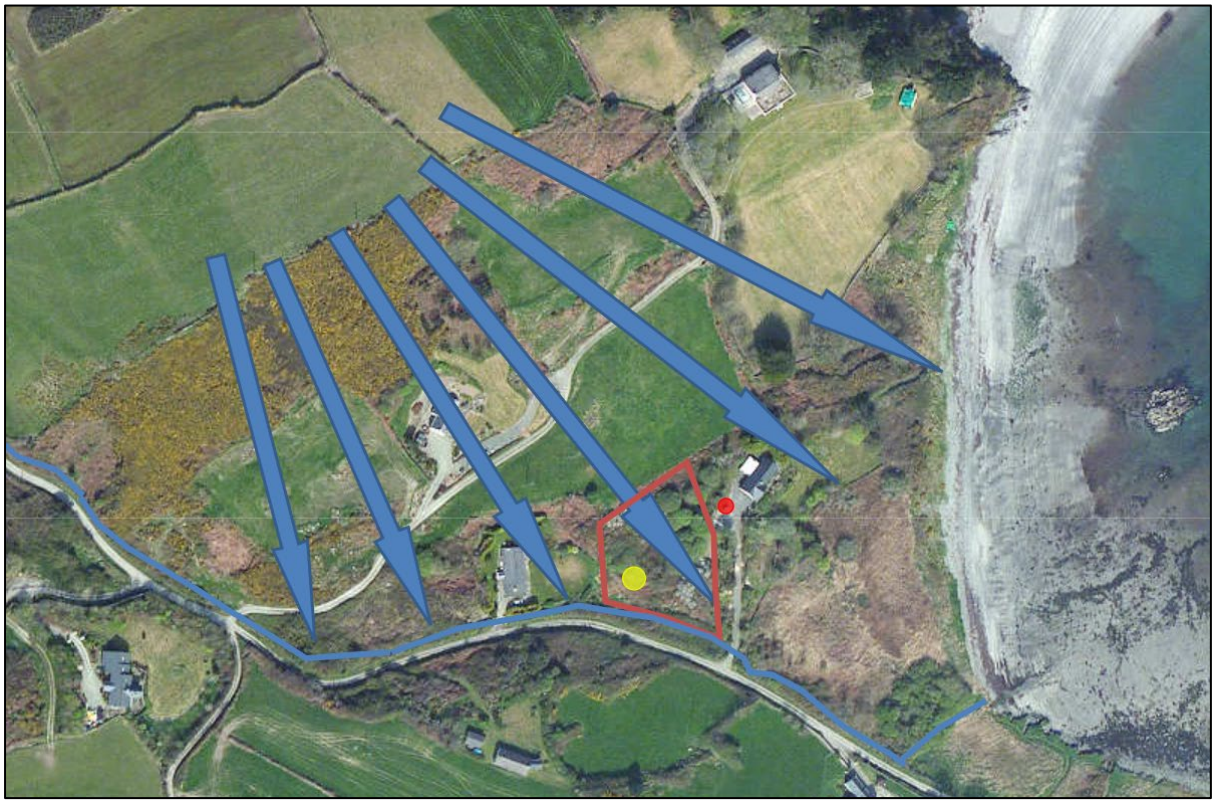

Figure 2.6 above illustrates the indicative groundwater flow direction around this site which shows that groundwater flows diagonally through the site from elevated ground in the NW towards the SE direction and the adjacent watercourse. Given this information and the distance from the proposed infiltration area to the neighbouring

well (>45m) I am satisfied that the proposed location for the infiltration areas would not pose a risk to the quality of the water in the neighbouring drinking water well, subject to proper treatment facilities being in place.

2.3.2. Other relevant separation distances identified to be relevant to this site were for up-gradient domestic wells, foreshore, watercourses, adjacent septic tank and percolation area, neighbouring dwelling house and road. Having reviewed the proposed location for the treatment system components I am satisfied that the separation distance requirements were compliant for all of the above features in accordance with Table 6.2 of the CoP, 2021.

2.4. Appeal submission relating the adequacy of the assessment

2.4.1. The appeal included a report prepared by AHEAD Engineering which consisted of a review of the site suitability assessment conducted for the site in question. This review identified the following issues of concern relating to the proposed treatment system and surface water issues:

- Compliance with the requirements of Section 6.7 of the CoP, 2021 relating to site improvement works had not been demonstrated.
- The imported soil was not carried out with the appropriate authorisation
- The design of the proposed wastewater treatment plant (wwtp) was lacking in detail and contained inadequate provision for plant failure
- The design of the soakaway was inadequate

2.4.2. Section 6.7 of the CoP, 2021 describes how in certain circumstances it may be possible to render a site suitable for development after carrying out specific engineering works known as ‘site improvement works’. These improvement works are highly technical and can only be undertaken by qualified personnel and in the case of soil being imported for use in a soil polishing filter, percolation testing is required for each 300mm layer imported. In this instance, the infill material has not been tested appropriately and therefore, the applicant has not demonstrated that compliance with the requirements of Section 6.7 of the CoP 2021 has been achieved.

2.4.3. The importation of an unknown quantity of soil has been conducted for the purposes of site improvement works according to the applicant. The volume and source of this material and whether authorisation under the Waste Management Act,1996 as amended was required or sought has not been clarified in the application or appeal documentation available to me. The enforcement of the Waste Management legislation is a matter for the relevant Local Authority (Cork County Council).

2.4.4. With regard to the matter of the design of the proposed wwtp lacking detail, I agree that this is the case. I have outlined in Section 2.2.5 that the proposal provided insufficient details on the type of secondary treatment system or tertiary treatment system to be installed. The necessary level of detail required to complete Sections 5.0 and 6.0 of the SSA form has not been provided by the applicant. With regard to inadequate provision for plant failure, the lack of detail on the type and size of treatment processes proposed means assessing how a particular element can deal with loss of power is impossible.

2.4.5. The proposed surface water disposal details submitted with the application form suggested that connection to soakaways within site boundaries would be route of disposal. No additional information on the location of these soakaways was provided with the application or appeal. Given the size constraints of the site, known bedrock/water table depths and proximity to neighbouring drinking water wells, the safe disposal of surface water from the site is of high importance. The disposal of surface water in soakaways at this location should be designed in accordance with BRE Digest 365 procedures.

Finbarr Quigley
Environmental Scientist

27th August 2025