

HAVANT BOROUGH COUNCIL

Town & Country Planning Act 1990

Consultation on Planning Application

MEMORANDUM

From:	Environmental Health	To:	Development Control
Our Ref:	PR202509-104395	Your Ref:	APP/22/00155
EH Case Officer Extn:	44 6677	Date:	17 October 2025
DC Case Officer:	Tina Pickup		
DC Case Officer Extn:			
Application Number:	APP/22/00155		
Site Address:	2, 2A, 4 and 6 Seagull Lane, Emsworth, PO10 7QH		

Proposed Development: Demolition of 2 & 2a Seagull Lane and warehouses 1, 2 and 4. Existing unit 6 Seagull Lane retained with external amendments including cladding and utility enclosure. Construction of 3No light industrial buildings split into 8No units.(24.03.23). Request to discharge conditions 3,4,5 & 8 (30.05.24). Request to discharge condition 7 (11/11/2024). Request to discharge condition 9 (06/12/2024).

Reconsultation on revised documents pursuant to c.3 (Contamination) & c.7 (Drainage)

Observations / Comments:

Supporting documents reviewed in connection with these comments:

- Ground & Water Ltd. Phase II Site Investigation Report Ref: **GWPR5475/SIR/November 2023v1.02**
- Ground & Water Ltd. Remediation Method Statement and Ground-Gas Design Report Ref: **GWPR6492/RMS&GGDR/March 2025v1.02**
- Ground & Water Ltd. Remediation Method Statement and Ground-Gas Design Report Ref: **GWPR6668/RMS&GGDR/August 2025v1.01**
- Drawing No 13505-100revP3-May 2024 Site Drainage Strategy
- Drawing No 13505-101revP3-Aug 2024 Local Drainage Plan 1 of 2
- Drawing No 13505-101revP3-Aug 2024 Local Drainage Plan 2 of 2
- Drawing No 13505-103revP2-Aug 2024 External Works Plan 1 of 2
- Drawing No 13505-104revP2-Aug 2024 External Works Plan 2 of 2
- Drawing No 13505-105revP1-Aug 2024 Sections & Build Ups
- Drawing No 13505-106revP1-Aug 2024 Sections & Build Ups

In addition, local spatial resources, planning archive & documentation relating to the adjacent gasworks has been reviewed.

Neither GWPR5385/DS/June 2023 (Phase 1 Desk Study Report) nor the GWPR5385/SIR/June 2023 (Phase 2 Site Investigation Report) were available for review. It is assumed that the latter is superseded by GWPR5475/SIR/November 2023.

Policy Position

Adopted Local Policy DM17 & DM18 relate to this development, alongside NPPF paragraphs 196 & 197 (2024). Both environmental and human receptors are relevant because the statutory definition of contaminated land includes the significant possibility of pollution to controlled waters, and the applicable definition of harm includes 'to the health of living organisms' and 'interference with ecological systems'.

The policy applies to the planning red-line area and not beyond it. In this case, the adjacent gasworks is a significant contributing source of contamination (but not necessarily the exclusive source), and the applicant cannot be regarded to be responsible for mitigating an off-site source of contamination as a condition of development of land within the red-line boundary.

However, contamination that is already within the red-line boundary is within scope insofar as it's ability to act as a source of contamination in it's own right; i.e. disregarding the existence of a source external to the development land.

This is particularly pertinent in this case, as the principal gas works source is subject to active remediation within (a limited part of the-) curtilage of the former gas works land.

Policy requires that development land be suitable for it's proposed use, taking account of contamination risks; that after remediation, land should not be capable of being determined to be Contaminated Land, and in the majority of cases, betterment should be achieved in line with the environmental limb of the overarching planning objective (NPPF par. 8 c)). Adequate site investigation must be undertaken to ensure that these planning objectives are met.

Assessment & remediation/mitigation proposals summary, pre-dating the August '25 revision of the RMS & GGDR

GWRP5475 SIR

The Intrusive investigation identified visual & olfactory evidence of contamination of both soil & groundwater, and concentrations soil determinands which had the theoretical potential to pose a risk to controlled waters, via leaching. This was based upon a high-level semi-quantitative assessment that uses solubility limits and benchmarks that derive from human health risk assessment.

The report concluded that more detailed risk assessment was necessary, and recommended that the assessment (the means & the output) be agreed with the Environment Agency. [Contamination 'Link 1' – Controlled Waters].

Contamination that may pose an unacceptable risk to human receptors via inhalation of vapours was also identified. This was examined using multiple lines of evidence, including direct sampling. Notwithstanding that the tabulated conceptual site model (CSM) included reference to a '*vapours from on-site contamination affecting occupants of neighbouring landuse*' linkage [Contamination 'Link 2' – Residential Vapour], the assessment considered only commercial receptors and concluded on this basis that no intervention was justified.

The Phase 2 report does not make specific or reference to a detailed site history from desk based sources, and it is unclear whether the authors had identified the nature of the prior light industrial land use at 2/2A Seagull Lane in particular, or that the building adjacent to the West Boundary included ground floor residential use. The planning archive would appear to confirm metalworking and the application of solvent-based metal coatings in connection with both manufacturing, and automotive repair & refinishing at 2A Seagull Lane, thought to have occurred within the building abutting the Western Boundary of the site. The only trial hole present within this plot was completed as a vapour well. Direct vapour sampling of this well identified vapours at

concentrations, in excess of those identified from a vapour well installed within the original gas holder on the adjacent gasworks site, and several determinands not represented in monitoring at the assumed source.

GWRP6492 RMS

This report represents a further phase of intrusive works, represented by the installation of 4 additional wells. While these carry references duplicated from GWRP5475 the positions are not proximal in all cases. Care is needed in associating results with the spatial CSM.

In respect of Link 1 (Controlled Waters), the Remediation Method Statement (RMS) reports water samples collected from the WSX-'A' positions, noting 'numerous exceedances' of Environmental Quality Standards (EQS) noted within groundwater at the site, relating to PAHs, TPHs, and cyanide.

Remediation recommendations for Link 1 were unclear. Essentially, a 'do nothing' approach was proposed alongside a 'removal of visibly-impacted soils' approach, with no specific recommendation as to which should be taken to be the proposal for approval. This is problematic for acceptance of the report, as the strategy for addressing contamination risk would be ambiguous, and unenforceable, notwithstanding concerns over whether or not the either approach is justified based upon current site knowledge.

The drainage strategy is also relevant to Controlled Waters risk, representing both a preferential pathway for leached contaminants to reach local surfacewaters, and as a hydraulic driver for leached contaminants to migrate via the groundwater body (thought likely to be in continuity with the river Ems). The strategy is principally driven by Southern Water requirements, and the required falls; but for contamination purposes presents an option for tanking the permeable voids with bonded impermeable membranes to mitigate the leaching risk. No specific proposal is given, and it is again implicit that the LPA is being invited to determine (and specify) the preferred option. As with the remedial options for Link 1, it is not clear that to me that it is possible to discharge c.7 without first requiring a specific revision of the drainage scheme documentation; I am not aware that conditional approval of the scheme (a condition discharge application) is possible.

In respect of Link 2, the vapour risk assessment is updated to include a further line of evidence, based upon dissolved phase contaminants. The conclusions of GWRP5475 are reiterated, and there is no material update of the tabulated CSM. The additions to the human health vapour risk assessment do not advance our understanding of the spatial CSM which relates to Link 2; no new information is presented in relation to 2A Seagull Lane..

Outstanding Issues Prior to the August '25 revision of the RMS & GGDR

Link 1 – Controlled Waters

Both the Stage 1 & Stage 2 risk assessments identified potentially significant risks to controlled waters, and no clear remedial strategy is proposed. The spatial CSM is not well defined, and is not necessarily well understood – the narrative spatial CSM presented by G&W differs from assessments undertaken in connection with the same source on the adjacent site, and some apparent outliers exist within the factual reports that are not readily explained by either version.

The authors have not addressed the policy driver articulated above, and are either reliant upon an absence of liability/responsibility for the applicant to address ('do nothing'), or upon an essentially precautionary remedial intervention that is poorly defined in terms of the spatial area and soil volumes involved. Requiring the latter may be unreasonable without first establishing necessity and appropriately defining the remedial objectives (see c.3 requirements). A quantitative risk assessment was sought.

I have approached the Environment Agency for authoritative advice. Following some review of local spatial context, the Agency agreed that stage 2 results were high, and of potential concern. It is apparent however that because the development land is not obviously associated with the gasworks, the Agency would reject a consultation at triage, and it would not reach the groundwater & contaminated land team. The Agency agrees that in this particular case, this appeared to be a perverse outcome. The time required to review the detail of this site proved prohibitive to securing an authoritative opinion via an informal route.

The Groundwater & Contaminated Land team has confirmed that it would only seek formal involvement if there is a 'clear and significant issue' requiring attention, e.g. *'if contamination from the site was known or strongly suspected to be impacting the River Ems'*. Based upon summary groundwater results from GWRP6492 & a brief review of spatial context, the Agency did not believe this to be the case. However, when challenged specifically on the benchmarking being applied relative to EQS & the Remedial Targets Methodology (RTM), and the Agency's current view of the applicability of the RTM model; the Agency declined either to defend the position of qualitative dismissal, to comment against the validity or applicability of the quantitative risk assessment method, or to comment on the driver for its screening out of such sites – e.g. whether driven by a need for prioritisation of limited available resources, or by an empirical re-evaluation of risk benchmarks (e.g. the EQS, RTM procedure & related guidance).

My interpretation of this response is that the Agency was not able to provide an authoritative opinion either way, that there has been no formalised shift in the Agency's view of the underlying environmental toxicology, and that for the purposes of the policy pathway (i.e. via planning), the assessment of contamination risk remains with the Local Authority in this case.

Given that the need for a quantitative assessment could not authoritatively be dismissed, I regard it to remain a reasonable requirement under c.3, as well as being in the interests of avoiding an unnecessarily broadly defined (and potentially disruptive/costly/onerous) remedial option being required on a precautionary measure (e.g. in the absence of a quantification of risk); notwithstanding other options for a suitable precautionary/voluntary scheme.

Link 2 – Residential Exposure to Vapours

Given the prior commercial use associated with 2A Seagull Ln-, and the proximity of relevant residential receptors-, the direct vapour monitoring results from WS3 are regarded to be of potential concern.

It is noted that WS3 was flooded on all occasions during gas monitoring, but no comment was made on water levels during the vapour monitoring (flooded means standing water levels above the response zone). The authors have acknowledged that these conditions mean that the measurement of *'any bulk gas, VOC and vapours are going to be "dodgy" at best'*.

It remains unclear whether the sampling procedure involved a well purge, what duration of sampling was required, and whether the flow was consequently impacted by a rapid-recharge of the well. Consequently, it remains unclear whether it can be regarded to be representative of site conditions or is, to some degree, an artefact of the measurement procedure.

My understanding of the spatial CSM does not well-support the authors' inference that vapours at WS3 are directly linked to contamination within the nearby Gas Holder. Relevant facts include the local geological succession, the levels of groundwater strikes upon drilling, distance from the inferred source feature, height of the top of the holder structure, site topography, and the spatial distribution of visual & olfactory evidence of contamination related to the contents of the Gas Holder. In principle, the position of the well at WS3 is sufficiently above- and up-hydraulic-gradient of- the Gas Holder as to be likely to preclude the direct transport of volatile contaminants with groundwater, or the migration of vapour by either diffusion or advection within the vadose zone.

This would lead me to conclude that the WS3 result has not been credibly associated with the Gas Holder source at this stage. The position could however be credibly associated with a local source, given its position down-hydraulic-gradient of a potential local source, as identified from desk-based information and as informed by local site investigations.

At the time of writing of GWRP6492, WS3 was the only trial hole position within the curtilage of 2A Seagull Ln., and so the only factual information available with which to attempt to characterise soil quality at that property.

Unfortunately, WS3 was positioned within the 'yard' area of the site, where the routine undertaking of potentially contaminating activity was known to have been prohibited by planning condition. This means that the position cannot be considered directly representative of a working area or a location where contaminating materials might have been expected to be stored or handled. There was no corresponding Groundwater sample from this position, and neither soil sample from this position was scheduled for TPH or VOC analysis. According to log, the shallow sample was of the concrete hardstanding rather than the underlying made ground, and the deep sample was at the interface between natural River Terrace deposits and the underlying London Clay – being similarly unrepresentative of either the made soils, or the level at which the groundwater strike/rest levels were recorded.

WS3 is the only Ground & Water Ltd. sample position west of the alluvium (in the river terrace deposits-), which appears to be important factor for local groundwater.

No residential values were presented for generic vapour assessment criteria (vGAC). As a result, it was not possible to undertake a broad 'sensitivity-tested' assessment of the likely triviality of WS3 vapour results to neighbouring residential property. Only one sample was taken, so it is not possible to make a judgement as to the likely range of results that might be obtained from this position. Groundwater results have shown significant variability in the concentration of determinands (over time, across the wider site), so variability might be expected. It is not possible to reliably determine whether the measurement represents an outlier, a value above or below the average in the typical seasonal distribution, or a value close to 'typical'.

It is worth reiterating however that the obtained vapour result from WS3 (of potential concern) is acknowledged by the authors' to be to be potentially unrepresentative. It is also worth noting that a flooded well is unlikely to over-represent a measured vapour result; the opposite is more likely because contaminants in a flooded well must migrate into the well with groundwater, and then volatise to the headspace from a surface area that is limited to the cross section of the well – diffusive & advective flows in vapour form would be expected to be substantially retarded.

A single trial hole would not normally be considered to be sufficient to characterise an independent potentially contaminating landuse, and would be very unlikely to be sufficient to disambiguate local sources from sources external to the site. A very good understanding of the spatial CSM, careful positioning, and a dense/detailed sampling strategy that includes complementary lines of evidence would normally be needed to support the degree of extrapolation required for this purpose. It is not considered that WS3 meets these demanding criteria, albeit for understandable reasons.

These factors were articulated to the authors as reasons why the report was not considered sufficient to meet the requirements of c.3 (2), highlighting targets for resolution in future phased or intrusive or assessment work.

Remedial/Risk Mitigation proposals

Link 1 – Controlled Waters

From the context of dialogue with the authors, the proposal options are taken to be implicitly biased toward 'do nothing'. It is unclear whether this is an appropriate strategy, and I do not feel

that the Council is sufficiently well informed as to require, on an essentially unqualified basis, the grubbing-out and removal of all soils that show visual and olfactory evidence of gasworks contamination (as proposed under the alternative) – potentially running to excavation of >1000cu.m of soils across a significant percentage of the site area. The authors rightly point to sustainability as a material factor.

Further detailed assessment was sought – potentially based entirely upon extant information.

Link 2 – Vapour

Essentially there were no proposals relating to vapour pathways – the need was screened out using comparisons to commercial GAC which considered occupants of the completed development (only). Whilst the assessment is appropriate to the development, it does not address the risks identified on the plot of 2A Seagull Lane to receptors at Seagull Court.

Further assessment was sought, considered likely to require additional investigation &/or monitoring.

GWPR6668; August '25 revision of the RMS & GGDR

This document reports an additional phase of intrusive works, comprising 9 additional trial pits, and repeat groundwater sampling from the phase 2 (WSX-A) wells. 3 new trial holes were positioned to inform characterisation of made soils at 2A Seagull Lane to address Link 1, and the remainder were positioned broadly across the assumed plume of migrating contamination from the adjacent Gas Holder (Link 2).

Of the 3 trial holes relevant to relevant to Link 2, two were positioned within the same yard area as the destroyed phase 1 WS3 well from which the vapour results were obtained. The third hole was positioned within the 1967 'corridor link' between the industrial units on site. The footprint of the former workshop unit (adjacent to the residential receptor and up-hydraulic-gradient of the WS3 vapour measurement) was not targeted for investigation. It is unclear why, given the inferred spatial CSM from prior reports and concerns communicated to the authors.

Groundworks were undertaken in July, and no groundwater strikes were recorded in any trial hole, to a typical depth of -2.0m BEGL and terminating within cohesive superficial deposits (identified as HEAD). Given the findings of prior investigations, I would infer that the lack of strikes likely results from 2025 being an abnormally dry year, rather than typical seasonality.

The report does not explicitly seek to incorporate the results of the phase 3 intrusive works into a spatial CSM, and no spatial CSM is specifically articulated.

Link 1 – Controlled Waters

The sampling suite was expanded slightly relative to the phase 2 work, again referring to 'numerous exceedances' of (at receptor-) quality standards, 'relating to PAHs, TPHs, cyanide' and now in addition, 'some metals'.

The revised groundwater RMS reiterates that the authors consider on-site sources to be 'minimal', without comment on the presence of solvent determinands in groundwater onsite that are not typically associated with the production of town gas, and which are more abundant on the development land than on the adjacent site.

Link 2 – Residential Exposure to Vapours

No additional vapour sampling was undertaken as part of the phase 3 works. Results from the additional ground of groundwater monitoring have been compared with groundwater vapour generic assessment criteria (GACgwwap – distinct from vGAC), being values relevant to

commercial class human receptors only.

It is noted that the WS3 well re-sampled during the phase 3 works was the WS3A position, which is significantly down-hydraulic-gradient of-, and not therefore directly relevant to-, the residential receptors adjacent to 2A Seagull Lane. The summary conclusion that there is 'no significant risk of vapour intrusion' therefore in practice refers specifically to the occupants of the future development, and not to more sensitive neighbouring land uses.

Remedial proposals

This version of the report retains the two options to Link 1, namely 'do nothing' or 'removal of visibly-impacted soils', but differs from the prior report in that it expresses a clearer preference for the former.

Discussion does not address the policy position or critique of the spatial CSM that underpinned my prior informal recommendation under this consultation that the GWRP6492 report not be accepted as sufficient to discharge c.3.

One additional proposal is included in the revised text, relating to the post-completion monitoring of groundwater to demonstrate that the voluntary source-removal works on the adjacent gas works site have been effective in materially reducing the concentration of contaminants in groundwater on the development land. This proposal may have been made to encourage support for the 'do nothing' approach, however, it is problematic for a number of practical and procedural reasons, and cannot be accepted without further clarity on location, purpose, scope and contingency options. I would advocate against supporting this newest proposal.

The 'no intervention' recommendation is retained in respect of Link 2.

Critique

The report presents additional factual information, but does not provide a narrative rationale for the sampling strategy, investigation design objectives or an assessment of how the results of work advance our understanding of the spatial conceptual model which must necessarily underpin the authors' choices & recommendations (whether explicitly, or implicitly).

Nevertheless, the application asks the LPA to agree the unstated premise, necessitating the undertaking of an independent assessment.

Link 1 – Groundwater; Fieldwork, assessment & remedial proposals

The revised Level 2 risk assessment section notes significant visual & olfactory evidence of contamination at Phase 3 locations TP5, TP7 & TP8.

The position of TP5 is notably distant-, and significantly north of- the Gas Holder. Evidence of free product here is at odds with the assumed east-to-southeast migration direction – but is not-inconsistent with local topography. This evidence extends the potential primary plume area relative to that which may be inferred from prior works.

Visual and olfactory evidence was also notably absent from TP4 & TP6. These trial holes were positioned north of the Gas Holder, on the line of the assumed E>W plume gradient, and between two positions where significant visual and olfactory evidence of contamination was noted in earlier phases of work (WS4A to the West, and WS5 to the east).

Taken together with the factual reporting from prior investigative phases, and factual reporting from the adjacent site, the evidence from these positions is considered to be informative in refining the spatial CSM.

The phase 3 factual reporting is supportive of the generalised spatial CSM inferred by the authors (which could be summarised as 'easterly migration of contamination from source') and weighs against that inferred by others for the same source (e.g. 'due south plume migration'). I would go further and suggest that the consensus of available information could now be reasonably taken to support an inference that the majority of contamination originating from the original gasholder has might reasonably be expected to have migrated across the property ownership boundary onto- (i.e. is migrating via-) the development land.

The absence of visual & olfactory evidence of gasworks contamination in trial hole positions TP4 & TP6 however suggests that the hydrological model is probably more complex than is articulated in any prior reporting, and I would suggest that this warrants consideration.

Overlaying the existing network of sewer pipes at the site offers a possible insight, with the discoveries of visual and olfactory evidence being fairly closely aligned to the network, noting in particular an East/West oriented conduit located just north of the boundary between the original gasworks site and the development land. It is considered possible, if not likely, that the distribution of evidence of oil & tar contamination is substantially influenced by preferential migration along the external annulus of these drainage conduits. This interpretation is broadly consistent with the absence of evidence at TP4 & TP6, as well as discoveries near the interceptor chamber and further north, at TP5.

If (as might be expected, given the construction period-) the conduits permit the ingress of groundwater, then the conduits themselves may also represent a migration route. It is understood that the extant on-site system is foul/combined, and it is assumed that it's destination is ultimately via treatment works (and not direct to the environment) – being a factor material to the controlled waters risk assessment.

It is noted that the existing East/West drainage connection crosses the development land boundary with no. 8 Seagull Lane, and this may currently represent a preferential migration pathway by which rapid transit of contaminants toward the river Ems may occur. Similar potential preferential pathways exist on the southerly boundary of the development land, outside of the development red-line. Visual & olfactory evidence close to that boundary might be similarly attributable, both to the original gasholder and to additional sources on that site, and consequently may not represent evidence of a single, contiguous plume.

Service plans for the gasworks do not show a drainage conduit crossing the boundary in a North/South orientation in the region of the development land. Drainage plans for the Seagull Lane properties are consistent with plans for the adjacent site, suggesting that the on-site interceptor serves only the former unit south of No. 6 Seagull lane, and that the system likely falls to the north, discharging to the east/west aligned conduit. It should be noted that any contaminants originating on the development land would likely migrate via the same pathway(s), and it should not be assumed that the gasholder is necessarily the only source of contaminants.

Taken together, the above assessment does suggest a more limited distribution than might be expected under the G&W inferred spatial CSM, with implications for assessment &/or the remedial strategy.

In respect of the latter, it is noted that development proposals include a mixed approach to the treatment of the extant drainage network, with some assets to be abandoned in place, and others to be grubbed out & removed. It is considered that these works are likely to encounter impacted soils and groundwater. At present, it is unclear how this would interact with the discovery strategy – as with the optionality of remedial proposals, the proposal contains significant ambiguity if approved in it's current form (it would permit the retention of significant free-phase contaminants on site without either violating the proposals or triggering any need for the Council to be informed, simply because the encounter might be expected).

An opportunity exists for better certainty in the spatial CSM & risk assessment (by observation)

and for site betterment, e.g. though the targeted removal of impacted soils and the breaking of preferential migration pathways through the sealing up of conduits (e.g. by placement of suitable clean, cohesive subsoil in place of more porous material). This potentially makes the proposed 'soil removal' option both more limited/targeted, and more aligned with the proposed site development schedule, and so preferable to an unqualified 'do nothing' approach, a broad-ranging precautionary soils removal strategy, or to a conservatively parameterised detailed quantitative assessment (which could itself lead to an overly precautionary intervention).

Link 2 – Vapour; Fieldwork, assessment & remedial proposals

The phase 3 works do not provide decisive new information in respect of link 2. The works did not target the footprint of the local potentially contaminating landuse, were not designed to quantify groundwater conditions up-hydraulic-gradient of the gasworks source, and were not of a form which could have been completed as gas/vapour/water monitoring wells.

Whilst trial pits TP1, TP2 & TP3 were located within the footprint of 2A Seagull Ln, both TP3 & TP2 were positioned within the same yard area as WS3. The samples taken from these positions are also very shallow – being representative of the made ground (yard surface subbase & impact of local surface spills), and not informative of evidence of an up-gradient contaminant source which (from WS3 vapour results) might be expected to be migrating with groundwater – e.g. from the operational workshop previously adjacent to the residential receptor.

TP1 is better placed for this purpose, being likely to likely to coincide with the footprint of a corridor linking the East & West workshops on the plot of 2A seagull, which may have been used for storage & ancillary operations, but not within the workshop itself. The TP1 sample scheduled for analysis was similarly shallow, and so it's target remains broadly equivalent to that represented by TP2 & TP3.

The engineering log for TP3 did not specifically note any visual or olfactory evidence of contamination, unless the authors intended reference to 'dark grey...clay' to be taken as evidence of hydrocarbon staining. With reference to all available reports relevant to the gasworks (including those submitted in support of APP/22/00155), the use of such references has been variable, and not always clear; sometimes describing a natural deposit and sometimes referring to staining. the absence of a groundwater strike hampers a conclusive inference. The log for TP3 is however clearer in the absence of olfactory evidence of hydrocarbon odour. Taken together with the magnitude of vapour results from WS3 & other contextual information; the result from TP3 is considered to weigh against the author's inference that the original gasholder is the primary source for the identified vapours.

The design of this phase of works has unfortunately missed the opportunity to investigate the footprint of either workshop unit on 2A Seagull Ln, but in particular the workshop up-hydraulic gradient of the identified elevated vapours, and adjacent to the residential receptor that is the subject of concern. It has also omitted the collection of additional direct vapour samples either at a position directly adjacent to the residential receptor, or otherwise at a time when groundwater conditions would have allowed for more reliable results (e.g. to quantify vapour levels under 'low' groundwater conditions, where the presence of soil vapour would be expected to be driven by diffusive & advective migration through soils, and so more representative of local sources rather than of potentially distant up-gradient sources migrating with groundwater).

Given these points, it is difficult to accept that this additional phase of work has sufficiently addressed the previously raised concerns, or has met the requirements of c.3 part 2). Similarly, I would consider that c.3 part 3) cannot be regarded to have been met for Link 2, because there has been no comparison between vapour results from WS3 and a vGAC that is appropriate to the adjacent residential building.

Drainage Strategy

It remains unclear whether a fully 'tanked' drainage system which essentially caps the site with an impermeable surface (i.e. represents permeable drainage/storage over a functionally impermeable layer-) would materially influence Link 1. The spatial CSM for Link 1 infers free-phase contamination within the planning redline boundary whose continued/ongoing migration may be driven by lateral flows external to the site, rather than percolating surfacewater within the development boundary.

The impermeable strategy would however achieve some benefits through a reduction of leaching from shallow made soils within the seasonally-vadose zone (within the development boundary). The cost of tanking the system relative to the overall scheme is likely to be small, and so I would recommend that the Council seek a tanked scheme in preference to a fully permeable system.

c.7 submissions do not make reference to it being a hydraulically isolated system. Approving the scheme as-submitted would divorce the overlying drainage scheme from the impermeable barrier beneath, which would then necessarily fall under the remedial strategy & verification plan under c.3. If the c.3 submissions are approved as-is, it would be at the discretion of the developer/ principal contractor to select the preferred solution (i.e. tanked or permeable system – impermeable membrane or none), without setting any in-principle selection criteria. As the reason for imposing c.7 references policy DM10, it is arguable that the implicit optionality written into GWRP6668 RMS is contrary to the purpose of the condition.

Amendment of the c.7 submission to make specific and exclusive reference to this feature may be needed to align the contamination RMS with drainage scheme approvals, and to avoid costly problems arising do not come to light until the validation/verification stage, which could cause problems with the discharge of c.11, and thereby present a barrier- or material delay- to occupancy post-completion.

With reference to comments above, the drainage strategy includes proposals to remove sections of the extant system, alongside the interceptor unit. These aspects of the scheme are regarded to be ancillary-, rather than integral-, to the proposed scheme, and so are best addressed under c.3.

Conclusions, Recommendations & Way Forward.

Link 1 – Controlled Waters

I remain unconvinced that the submission does enough to support a 'no-intervention' approach.

It is accepted that a substantial majority of the identified contamination originates from the adjacent gasworks site, and it is acknowledged that the contaminant 'reservoir' represented by the holder is in the process of being addressed by others.

What remains unclear is how much contamination is persistently present within the development red-line boundary, and whether (when isolated from the holder-source-) this contamination is likely to be capable of contributing to the pollutant loading of the river Ems at a level that is unacceptable under the applicable policy (which requires demonstration of 'no harm'; differing from the regulatory pathway under the contaminated land regime, which requires '[a significant possibility of significant-] harm' be demonstrated).

Environmental Health's independent assessment of the submissions presents the possibility of a conceptual model that is perhaps less concerning than might otherwise be inferred; suggesting a source-pathway-target (SPR) Contaminant Linkage characterised by a constrained plume migrating preferentially in service channels, spatially-limited to the vicinity of the drainage network, and with a narrow point of migration off-site. This model would substantially limit the volume of impacted material that might be expected, and would suggest a rapid transit of free product, potentially dominated by 'direct inputs from the reservoir' rather than 'leaching from a

partially attenuated soil source'. It may also be material that the river Ems appears to have a partially engineered channel in this location, which could be material in providing some hydraulic resistance & lengthening the migration pathway.

This model is just that however – it is what I would currently regard to be the 'best fit' to explain the available information, and could prove to be in error in a number of ways.

It is also worth emphasising that, were this land within the curtilage of a gasworks, the Agency would provide comment, due to the risks posed by made soils that could derive from gasworks wastes, and the presence of dissolved- and free-phase products of gasworks origins. That the Agency has declined to do so suggests that either of the following applies – a) the screening out of this site is based solely on landuse curtilage, and does not account for the potential association of contaminants with the gas works (e.g. risk), or b) that the Agency regards the material objective to be to address the reservoir of contamination, and that for all practical purposes, the remediation of a free-product plume is unnecessary even at this proximity to a river channel (meaning that the property/landuse boundary is material to it's risk assessment, and the plume position is not). My experience of the RTM assessment tool is that b) is unlikely to be supported on an in-principal bases, unless the Agency now regards it's RTM model to be flawed/materially outdated.

My recommendations remain the same as articulated previously, that the submissions advocate for a no-intervention approach that is not well supported by a risk assessment – indeed, the latest work extends the breadth of EQS exceedances identified in groundwater. The issue is the significance of these values, and the extent to which it is reasonable in policy terms to address it as part of this development.

I am fairly clear in resolving that the current submission is does not provide sufficient information to meet the requirements of c.3 part 2), otherwise this response would have been less expansive, and would have a clearer conclusion. I would consider that there are several ways which the Council could achieve surety that the policy objective is satisfied; summarised below;

- 1) **Demonstrate the explicit agreement of the Environment Agency** to the spatial CSM & SPT pathway model underpinning the qualitative dismissal of EQS exceedances identified in the stage 2 risk assessment.
 - Given that the Agency has confirmed that it will not respond to a consultation request by the Local Authority Development Management service, this would likely need to be secured as a commercial arrangement.
 - The commercial arrangement notwithstanding, I see no reason why Environmental Health would not defer to the Agency's Authoritative status on Controlled Waters risks, or see any reason that the LPA could not rely upon the authority of it's opinion. This option is in line with a proposal at GWRP5475 7.4 which was not pursued, and has been omitted from post-dated reports.
- 2) **Undertake a detailed quantitative risk assessment** that does account for the local hydraulic conductivity, volume of impacted material within the secondary aquifer, and dilution at the receptor; to determine the potential impact of the isolated contamination plume that presently exists within the development red-line area, and on this basis, to determine the need for intervention.
 - In practice, this may need to be a 'bracketed' assessment given uncertainties in the spatial conceptual model (e.g. conservative, and best-estimate parameterisation), and could assess different spatial CSM/SPT model scenario's to represent differing interpretations, as an iterative process starting with the most severe (which if dismissing significance, would be decisive).
 - The RTM may not be suitable for modelling contaminants migration in a free-phase, where inputs are not dominated by leaching & dissolved-phase migration, but since the plume will now be isolated from it's source reservoir, and that the authors expect at least partial retardation by soils on site (as evidenced by

staining) – the RTM may still be suitable. It is expected that this would serve an objective & risk-based decision making tool whose output will either support the 'no intervention' approach, or definitively demonstrate the need for-, and the minimum extent of- soil removal required to achieve a specified objective.

- 3) **Design a suitable precautionary risk mitigation scheme.** In the absence of a quantitative risk assessment, this would be precautionary in nature, and its objectives would necessarily be subjectively defined; ultimately providing surety against policy objectives on the basis of 'net expected benefit'. Such a scheme might be expected to include;
- investigation of the drainage network (e.g. confirming conduit falls, and determining where the network crosses development boundaries)
 - addressing the required works to remove extant drainage conduits as an integral part of a remedial/risk mitigation strategy, specifying a soil inspection, assessment* & removal policy (* - qualitative assessment is likely to be acceptable),
 - considering how preferential off-site migration pathways might be addressed (e.g. through the capping of service lines, and/or strategic use of puddle-clay or bentonite to seal any trenches/service lines which are evidently acting to support migration),
 - expanding the contamination discovery strategy sketched out at GWRP6668 5.7, aligning it with the objectives of strategic & precautionary inspection/soil removal, and;
 - align the drainage scheme represented by the c.7 submissions with the remedial objectives (reduce leaching, prevent drainage network acting as a rapid migration pathway for contaminant migration driven by lateral groundwater flows), and to include it as a risk mitigation measure that is subject to validation/verification.

I don't consider that additional non-targeted/general intrusive investigation is likely to be necessary to support any of the options articulated above; I believe that sufficient information is available to inform the Agency, to inform an RTM assessment using estimated & 'bracketed' parameters, or to specify a targeted soils removal strategy that is focussed upon addressing significant hotspots and outflows across the site boundary.

Link 2 – Vapour

Conclusions in respect of future occupants of the development are broadly accepted. I do not consider that the submitted assessment is sufficient to dismiss the 'red flag' vapour results from the phase 1 works, or to construct a SPT model with sufficient confidence as to justify a 'no-intervention' approach.

Contrary to Link 1, I think that resolving this will involve some additional targeted intrusive site investigation works. This is principally because the sensitive receptor is extant, outside the red-line area, and in third party ownership. For these reasons, it is considered that the way forward to resolve the policy objective is to quantify the risk for the purpose of either i) its dismissal as a material risk ii) to determine an off-site origin and so to confirm that it is outside the scope of the planning condition (note the policy position section above – same principals apply), or iii) to confirm a local source, quantify the risk and determine the nature and extent of intervention.

I would suggest that investigative/assessment works should ideally include some or all of the following;

- Two trial holes within the footprint of the Westernmost former workshop on the plot of 2A Seagull Lane, completed as wells. One should be positioned as close to the boundary as is practicable, accounting for the need to avoid obstructions (e.g. extant/retained founds)
- A groundwater sample from both wells, for analysis of free product and dissolved phase VOC

- Retention of wells until the assessment has been agreed – to permit repeat sampling where necessary
- Where wells are not flooded; collection of direct vapour measurements for comparison to vGAC calculated for residential receptors (report should provide clarity on the duration of sampling, and for short term samples, steps taken prior to-/conditions during- sample collection (e.g. purging, recharge rate),
- Soil samples representative of relevant shallow succession – from soils in the vadose zone, and coincident with the expected groundwater range, whether natural or made.

This might not be necessary where a comparison between appropriate vGAC and WS3 results, accounting for a suitable and fairly substantial margin of safety (for reasons given in the discussion above), demonstrate triviality of the results that are currently regarded to represent a potential concern.

Other contaminants/pathways & risk mitigation proposals

Where not discussed specifically here, it may be assumed that the risk mitigation proposals are broadly accepted. This applies to ground gas, potable supply pipework and radon.

A specific response will be made at the next reconsultation, where it is expected that supporting documentation will provide either a decisive means to dismiss the need for intervention, or a refined remedial strategy is presented which includes more tightly defined remedial works, objectives and contingencies.

Procedural

Potentially addressing Link 1 is the task that can be more swiftly & easily resolved; potentially by means of adjusting the RMS & Verification plan, or securing a literature review by the Agency under commercial arrangements. Investigation pursuant to Link 2 may have longer lead times, and could involve periodic sampling in the event of non-trivial adverse results.

It is considered that a spatially defined partial discharge might be appropriate. Where I am in a position to agree the assessment/proposals in respect of Link 1, c.3 could be discharged in respect of the curtilage of 2, 4 & 6 Seagull Lane, with the restriction on commencement being retained within the curtilage of 2A pending agreement of the assessment and remedial/risk mitigation proposals in respect of Link 2. c.3 includes the clause '*other than... [at] any other date or stage in development as may be agreed in writing with the Local Planning Authority*', which is intended to support phased approaches to assessment & development.

Mr. Jonathan Driver
Environmental Control Officer