Shell UK Oil Products Limited

Shell Welwyn Garden

Environmental Strategy Plan

1922098-R04 (02)

APRIL 2022

RSK GEOSCIENCES

RSK GENERAL NOTES

Project No.: 1922098 R04 (02)

Title: Environmental Strategy Plan: Shell Welwyn Garden, Stanborough Road, Welwyn Garden City, AL8 6XA

Client: Shell UK Oil Products Limited

Date: April 2022

Office: RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Herts, HP3 9RT

Status: Final

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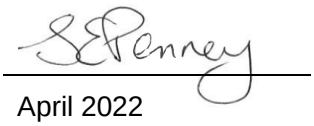
Signature		Signature	
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Date:	April 2022	Date:	April 2022

CONTENTS

1 INTRODUCTION

1.1 Background and context

RSK Environment Limited (RSK) was commissioned by Shell (UK) Oil Products Limited (Shell) to prepare an environmental strategy plan (ESP) for the operational retail filling station at Shell Welwyn Garden, Stanborough Road, Welwyn Garden City, Hertfordshire, AL8 6XA. The work was carried out to support Shell with their site asset management.

The construction redevelopment works proposed at the site include a full site reconfiguration following demolition and removal of existing sales building, canopy link and carwash/jet wases, erection of a new sales building, provision of car parking spaces, provision of EV charging bays and associated plan. which includes:

- demolition of existing shop building and relocation to the north of the site with larger footprint
- removal of exiting car wash area to allow for relocation and enlargement of the shop building.
- removal, replacement, and relocation of the offset fills
- removal and replacement of forecourt petrol interceptor and associated drainage
- removal, replacement, and relocation of the vent stack
- establishment of thirteen customer parking spaces and one disabled parking space
- establishment of four electric vehicle charging points

The site's location is shown as Figure 1. A plan showing the proposed redevelopment works is presented as Figure 2.

This report is preceded by the following RSK reports:

- Phase 1 Environmental Site Assessment, RSK report reference 305095 R01 (00), dated October 2019.
- Phase 1 Environmental Site Assessment - Update, RSK report reference 1922098 R02 (01), dated October 2021
- Phase 2 Investigation: Comprehensive Environmental Site Assessment, RSK report reference 1922098 R03 (00), dated March 2022.

This ESP should be read in conjunction with the reports listed above which describe development of the initial and refined conceptual models respectively, present the results of risk assessment on completion of this process, and conclude with an assessment of potential environmental issues at the site relating to soil and groundwater.

1.2 Purpose of the environmental strategy plan

The purpose of this environmental strategy plan (ESP) is to support the environmental aspects of the planning process related to soil and groundwater and to include provisions for managing potential environmental liabilities associated with soil and groundwater at the site during the redevelopment.

An application for planning permission was submitted to Welwyn Hatfield Borough Council on September 2021 (ref: 6/2021/2260/FULL).

The proposed scheme includes for: 'Redevelopment of petrol station; including demolition of existing sales building, canopy link and car wash/jet washes, erection of a new sales building, provision of car parking spaces, provision of EV charging bays and associated plant, erection of a new bin store, retention of forecourt and canopy, and associated works.'

The Phase 1 and Phase 2 processes did not identify a requirement for specific remedial action (such as preparation of options appraisal, remedial strategy and implementation documents) as a result of the investigation's findings, therefore this ESP sets out the approach to be adopted during redevelopment of the site to manage potential environmental risks associated with soil and groundwater which might arise and were not disclosed by the investigation for the reasons set out below.

It is understood by RSK that the proposed works do not include any changes to the existing fuel tanks or fuel dispensing infrastructure. However, removal of the shop building and carwash area will allow access to areas not previously accessible during the phase 2 investigation. It is feasible that during the re-development works, hydrocarbon impact may be encountered in the ground that was not identified or inferred at the phase 2 investigation stage.

A major function of the ESP is to make provision for dealing with the eventualities described above.

This report is subject to the RSK service constraints given in **Appendix A**.

2 PLANNING CONDITIONS RELATING TO SOIL AND GROUNDWATER

2.1 Planning conditions

In September 2021, a planning application (reference 6/2021/2260/FULL) was submitted to Hertfordshire County Council by Shell UK Oil Products Limited (Shell) representatives pertaining to the Shell Welwyn Garden fuel retail station located on Stanborough Road, Welwyn Garden City, AL8 6XA. Planning permission has not yet been granted.

Correspondence from the Environment Agency dated 5th November 2021 indicated the recommendation of the inclusion of seven planning conditions. RSK submitted a letter response detailing planed site investigation works at the site. The EA responded with no objections to the proposed investigation works. All correspondence is included in **Appendix B**.

3 BACKGROUND

3.1 General

This section summarises the site's setting and existing information including a list of geo-environmental investigation reports available for the site. For detail the relevant reports should be consulted.

3.2 The site setting

The site comprises an operational petroleum filling station in Welwyn Garden City. The site's location is presented in Figure 1.

The site is situated in a predominantly urban area, bound to the south by Stanborough Road, and to the north, east and west by residential properties. The site consists of a forecourt area with shop, canopy, car wash, two jet wash areas, two vacuums and an air/water dispenser. There are five underground double skinned storage tank compartments recorded in operation, situated immediately south of the offset fills. Records show that four historic decommissioned tanks were removed during redevelopment in 1994. There is an outside storage container and bin store behind the shop and car/jet wash areas.

The geology beneath the site is recorded to comprise the Kesgrave Catchment Subgroup (secondary A aquifer) over the Lewes Nodular Chalk Formation (principal aquifer). The RSK Phase 2 investigation encountered a variable thickness of generally granular Made Ground – ranging from 0.60 mbgl (MW103) to 4.7 mbgl (MW102). The Kesgrave Catchment Subgroup was encountered directly beneath the Made Ground to the maximum depth of investigation – 6.45 mbgl. The Chalk Bedrock geology was not encountered. The Kesgrave Catchment Subgroup generally comprised gravelly sandy/sandy gravelly clay or silt: silts and clays. The clay/silt layers were generally encountered below 3 m.

Water was encountered immediately after drilling had been completed in MW101 at 5.78 m bgl and MW105 at 3.40 m bgl, however all locations made use of the rotary coring with water flush drilling technique, as such it was initially unclear whether groundwater was encountered during the initial works. During a subsequent site visit, groundwater was purged and did not recharge. From this it is evident that groundwater (or perched water) was not encountered during the investigation.

The site is located within a Zone III (total catchment) source protection zone as designated by the EA. The nearest licenced groundwater abstraction is located 668 m to the northeast of the site operated by Roche Products Ltd for cooling purposes. No groundwater abstractions for potable water supply purposes are recorded within 2 km of the site. The nearest surface water features are the Stanborough Lakes and the River Lead both located approximately 1km to the southwest.

3.3 Environmental assessment summary

An intrusive investigation was completed in January 2022 and included the drilling of five groundwater monitoring wells and one vapour well. Selected soil samples were submitted for a range of constituents of potential concern (COPC). There were no visual or olfactory signs of COPC within any of the soils encountered during the intrusive investigation.

Based upon the information obtained during the site investigation and subsequent laboratory testing of soil, groundwater and potable water samples, the conceptual model developed as part of the Phase 1 assessment was refined by the completion of a generic quantitative risk assessment (GQRA). On completion of the GQRA, all relevant pollutant linkages were absent. It was, however, recognised that the limitations imposed on intrusive investigation on operational petrol filling stations precludes investigation and assessment of the condition of the ground and groundwater close to the subsurface infrastructure, in particular the ground around the existing USTs. Therefore, this ESP sets out a strategy to manage potential environmental risks arising from the condition of soils and groundwater undisclosed by investigations, as well as describing additional tasks during the redevelopment works, the purpose of which is to manage potential environmental liabilities which might arise during redevelopment.

4 ENVIRONMENTAL STRATEGY

4.1 Introduction

The strategy described below presents a selection of tasks which are either planned to be carried out or serve as contingency in the event that circumstances at the site indicate they should be performed. Note that issues related to health and safety of workers during development, and/or potential health and safety issues arising from the re-development works are not dealt with in the ESP, these are covered by the health and safety plan of the main contractor undertaking the re-development works. Management of waste generated by the re-development works is the responsibility of the main contractor under the provisions of their site waste management plan (SWMP).

The ESP provides for the following tasks:

- review of existing wells at the site and evaluation of the need to decommission, or protect and maintain groundwater monitoring wells;
- undertake decommissioning of the relevant wells;
- establish protection to those wells to be maintained (if applicable);
- once the site is non-operational, undertake additional sampling and chemical analyses via trial pits to further delineate or assess hydrocarbon impact in soil;
- undertake sampling and chemical analyses of soils from the limits of excavations carried out for re-development purposes;
- evaluation of the data obtained from re-development excavations using a risk-based approach;
- if necessary, undertake further risk assessment to evaluate the condition of soils remaining at the limits of re-development excavations in the event that COPC are found which require re-assessment; and
- preparation of a validation report.

In the event that conditions are revealed during re-development which cannot be dealt with under the provisions of this ESP, it may be necessary to prepare a remedial strategy to deal with COPC in soil and/or groundwater. Site decommissioning and demolition

4.2 Site decommissioning and demolition

The proposed re-development works includes the removal and relocation of the shop building, along with removal and replacement of the interceptor, and removal of the existing car wash facilities. The work will be carried out as specified by the Shell UK Retail Engineering Construction Project Management Consultant (PMC) (Artelia Group) on behalf of Shell.

4.3 Groundwater monitoring wells

Monitoring wells present at the site are identified in **Table 1** overleaf.

Wells are allocated to one of the following groups which reflect their potential importance at the site, vulnerability to construction works, or potential to form a preferential pathway.

Protect: *Wells designated as "protect" are significant installations at the site which are not in an area where they are at risk from excavation work, and should be protected throughout the re-development works from physical damage and/or ingress of substances into the well from the surface. The re-development contractor will develop a method statement for protection of designated wells.*

Keep: *Wells designated as "keep", are wells which may form part of ongoing future monitoring at the site, and as such should be maintained in a working condition wherever practicable during re-development. However these wells may be vulnerable to construction activities and it may not be feasible to maintain these wells throughout construction works. Consequently, RSK and the re-development contractor will liase in respect of the condition of these wells, and should the contractor identify that these wells have the potential to be damaged by construction or re-development activities, then RSK will be informed in advance and measures will be put in place to decommission relevant wells.*

Decommission: *Wells designated as "decommission" will be rendered inoperable by methods appropriate to the ground conditions and well construction. The decommissioning methodology will be in accordance with Environment Agency guidance (Ref 1), to prevent the creation of preferential pathways on site. Methods may involve over drilling and removal of installations to full depth and subsequent grouting or grouting of wells via the existing well pipe, which is left in situ. Over drilling or grouting works will be carried out by RSK employing a qualified site investigation contractor with experience of similar works.*

Sacrificial: *Wells identified as "sacrificial" are typically shallow and may be permitted to be damaged or dug up (and abandoned) as part of the redevelopment as they do not represent viable preferential pathways to sensitive receptors.*

In consideration of the above, **Table 1** indicates the proposed monitoring well designation for the site.

Table 1: Monitoring well designation

Well ID	Action				
	Protect	Keep	Decommission	Sacrificial	Comment
VP01			✓		Phase 2 assessment by RSK does not conclude potentially complete pollutant linkage are present which require further evaluation post-redevelopment
MW101			✓		
MW102			✓		
MW103			✓		
MW104			✓		
MW105			✓		

In consideration of the partial site redevelopment planned, it is likely that up to four of the monitoring well installations will be affected by the planned redevelopment works however, as no groundwater was encountered during the phase 2 assessment, all wells are recommended to be decommissioned.

The RSK Phase 2 assessment did not identify any potentially complete pollutant linkage with respect to concentrations of COPC in soils. As groundwater was not encountered and anticipated to be at depth RSK do not currently perceive that groundwater monitoring would be viable following site redevelopment.

Aspects associated with identification of unexpected impact are dealt with in Section 4.4. Should verification soil sampling indicate that further monitoring is likely to be required, then replacement monitoring positions may be re-installed.

4.4 Re-development excavations

Excavations for re-development purposes, such as to allow removal of foundations and the interceptor, will be carried out according to methods and to a temporary works design provided by the re-development contractor. Excavations will be observed by an environmental consultant from RSK for the following purposes:

- observation of the condition of the soil and groundwater exposed during excavation.
- identification of excavated soils within the excavation that exhibit visual and/or olfactory evidence of hydrocarbons.
- obtaining an appropriate number of samples for testing for COPC at the proposed limits of re-development excavations to provide evidence for the conditions of soils to be left in situ.
- where deemed necessary (as determined by a lines of evidence based assessment of data, including comparison of soil laboratory data with assessment criteria), RSK will supervise the enlargement (as far as is practicable and safe to do so) of proposed re-development excavations to remove soils exhibiting hydrocarbon impact and failing risk assessment beyond the excavation's originally proposed limits.

- provide information to the re-development contractor where required, in order that remedially excavated soils are appropriately handled, stored, re-used (if suitable) and disposed of to an appropriately licensed soil reprocessing centre or authorised landfill.

The nominal frequency of validation testing at the limits of excavations is presented in **Appendix C**.

In the event that re-development works encounter previously unanticipated and potentially significant hydrocarbon impact during the works, in the absence of an environmental professional's presence on site, a protocol agreed in advance with the re-development contractor will deal with such an eventuality. This will require the contractor to contact RSK for attendance at site to inspect the findings and advise on how to deal with the presence of unanticipated hydrocarbons.

Should significant concentrations and/or amounts of hydrocarbon impacted material be encountered that cannot be practicably excavated during the site works, then the Local Planning Authority will be informed, and an assessment made of the extent and potential risks associated with the material and, if necessary, revisions made to this strategy.

Waste Acceptance Criteria (WAC) testing will be undertaken, when appropriate, prior to the removal of potentially hydrocarbon impacted material from the site. These data will allow a decision to be taken as to which type of soil processing facility or landfill can accept the waste.

Soils designated as waste and destined for offsite disposal fall within the provisions of the site waste management plan.

In the event that phase separated hydrocarbons (PSH) are identified in excavations then measures will be taken to manage this occurrence in accordance with the contractor's method statements. Measures to deal with any waste water containing dissolved phase concentrations of hydrocarbons which may abstracted for water control purposes during temporary works will be covered by the contractor's agreed method statements/site waste management plan which will take into account this eventuality.

Excavated soils will be managed on site in accordance with the contractor's method statements. Soils may be temporarily stored on site prior to off-site disposal, or where there are significant restrictions on available space for temporary storage, soils may be excavated and removed from site immediately.

Where practicable, excavated soils will be segregated into different stockpiles reflecting:

- potential waste streams for further characterisation and eventual disposal; and
- soils with potential suitability for re-use, subject to confirmatory testing.

It should be noted that there might be restrictions on the ability of the site to accommodate temporary stockpiles of excavated soils due to space restrictions. Therefore, it may be necessary for soils to be disposed of off-site to an authorised and appropriate soil processing facility and/or landfill without temporary stockpiling.

4.5 Backfilling of excavations

As the replacement interceptor is to be installed in a similar location to the original position, the need for additional material is expected to be limited. Feasibility for re-use of such materials is dependent on the contractor's programme, method of working, available space for temporary stockpiling as well as chemical and geotechnical suitability of the soils.

Chemical suitability of soils excavated at the site for re-use is to be confirmed by chemical testing as follows:

- 1 test suite of analyses for COPC per 50m^3 with a minimum of three tests on soil destined for re-use.
- analytical results to be compared against the same risk based criteria used to assess the soils at the limits of excavations representing soils left in situ.

Soils which fail the risk based criteria will be disallowed for re-use and will be disposed of from site under the provisions of the site waste management plan.

Determining geotechnical suitability of excavated soils for re-use is the responsibility of the re-development contractor.

Where materials for backfill are imported then chemical suitability of soils is to be confirmed by chemical testing as follows:

- 1 test suite of analyses for COPC on imported backfill material at an approximate sampling frequency of 1 in 200 m^3 and a minimum of three tests per source.
- analytical results to be compared against the same risk based criteria used to assess the soils at the limits of excavations representing soils left in situ.

Backfill material around the new interceptor and associated pipe work may comprise pea gravel (or similar as specified by the designer/contractor). It is not generally possible to undertake chemical testing of this granular material. However, all imported pea gravel (or similar) material will be derived from an approved stated source and will be visually inspected by the earthwork's contractor prior to use on site.

To minimise the potential for imported backfill material to be rejected at site, chemical testing of imported material may be demonstrated by provision of appropriate chemical testing certificates obtained from the source, or, may be confirmed by written statements as to the origin of the material and its suitability for use at the site. Confirmatory testing may be undertaken on soils at source prior to its import if there is any doubt relating to information provided by the contractor and/or the source of the imported material. It should also be noted that there may be restrictions on stockpiling of imported materials at site to allow confirmatory testing for suitability.

The earthworks sub-contractor will be required to keep a record of waste material transfer movements in accordance with their Duty of Care obligation.

4.6 Validation of excavations

The nominal frequency of soil sampling at the limits of re-development excavations is set out in **Appendix C**. A nominal frequency of sampling is adopted based on the

predicted size of the excavations, however this may be influenced by observations of the excavations made in the field (visual/olfactory or based on PID sample head space measurements).

Sampling will be undertaken where appropriate on removal of fuel related underground structures and the sides and base of the excavations will be visually inspected for hydrocarbon impact. Where temporary works involve installation of temporary support to excavations which inhibit inspection of excavation faces, RSK and the contractor will devise a method of working to allow safe inspection and where appropriate, sampling.

4.7 Groundwater during temporary works

The Phase 2 investigation confirmed that groundwater was not encountered. Should unexpected, perched groundwater been encountered it should be dealt with by one of the methods described below:

- temporarily stored and/or removed directly from site by an appropriate and licenced organisation;
- treated on site prior to removal from site by an appropriate and licenced organisation; and
- disposed of via the site's interceptor system, in accordance with any conditions in consents to discharge.

Phase separated hydrocarbon (PSH) product, if encountered within excavations, will be removed and disposed of off-site.

The treatment and disposal of earthworks generated groundwater (and PSH if found) is the responsibility of the re-development earthworks subcontractor (including all related licensing).

4.8 Groundwater monitoring

On completion of the re-development works, the condition of the site will be evaluated, taking into account observations during excavation and the results of validation sampling. As outlined in Table 1, it is planned to decommission all existing groundwater monitoring wells prior to site development as no groundwater was encountered at the site to depths of 6m bgl. Decommissioning methods would follow the procedures outlined in section 4.3 and will follow Environment Agency guidance.

4.9 Reporting

A validation report which presents the tasks described in this ESP and the results of testing will be produced on completion of the works, with a copy provided, if requested, to the Local Planning Authority. The report will present the following information:

- the locations of any additional investigation work in the form of additional trial pits and boreholes (if completed) to delineate identified hydrocarbon impact or to provide advance information to contractors.
- the extents of redevelopment excavations.

- the results of analytical chemical testing at the limits of excavations (i.e. representative samples of soils left in situ).
- the results of chemical testing for waste classification and waste disposal purposes (if required).
- the results of chemical testing of soils used as backfill, either site won material suitable for re-use and/or imported soils.
- records of waste disposal and import of materials for backfilling held by the contractor.
- an assessment of soils remaining in situ at the site against risk based criteria.
- if necessary, the results of any site specific risk assessment carried out to assess the condition of the site after re-development.

5 CONCLUSIONS

This ESP has been prepared in order to provide information as to how potential environmental issues arising from the condition of soil and groundwater will be managed during the re-development works and reported thereafter. It has been produced for this site in place of a remedial options appraisal, remedial strategy and implementation and verification plans as the findings of the site investigation prior to re-development have not indicated that specific remedial action is required.

In the event that findings during the re-development works suggest that the provisions of this ESP are insufficient to manage potential environmental risks from soil or groundwater, then a remedial strategy along with the associated options appraisal, implementation and verification plans will be produced separately. Relevant stakeholders will be informed if this situation arises.

Upon completion of the works a verification report will be issued that will present complete details of all works undertaken, including a chronology of works undertaken, samples taken, results of laboratory testing and the results of risk assessments. The report will also present an updated CSM based on information obtained during the development works.

6 REFERENCES

1. Decommissioning redundant boreholes and wells, Environment Agency guidance booklet.

FIGURES

Rev	Date	Amendment	Drawn	Chkd	Appd
C01	07.03.22	First Issue	AS	WC	WC

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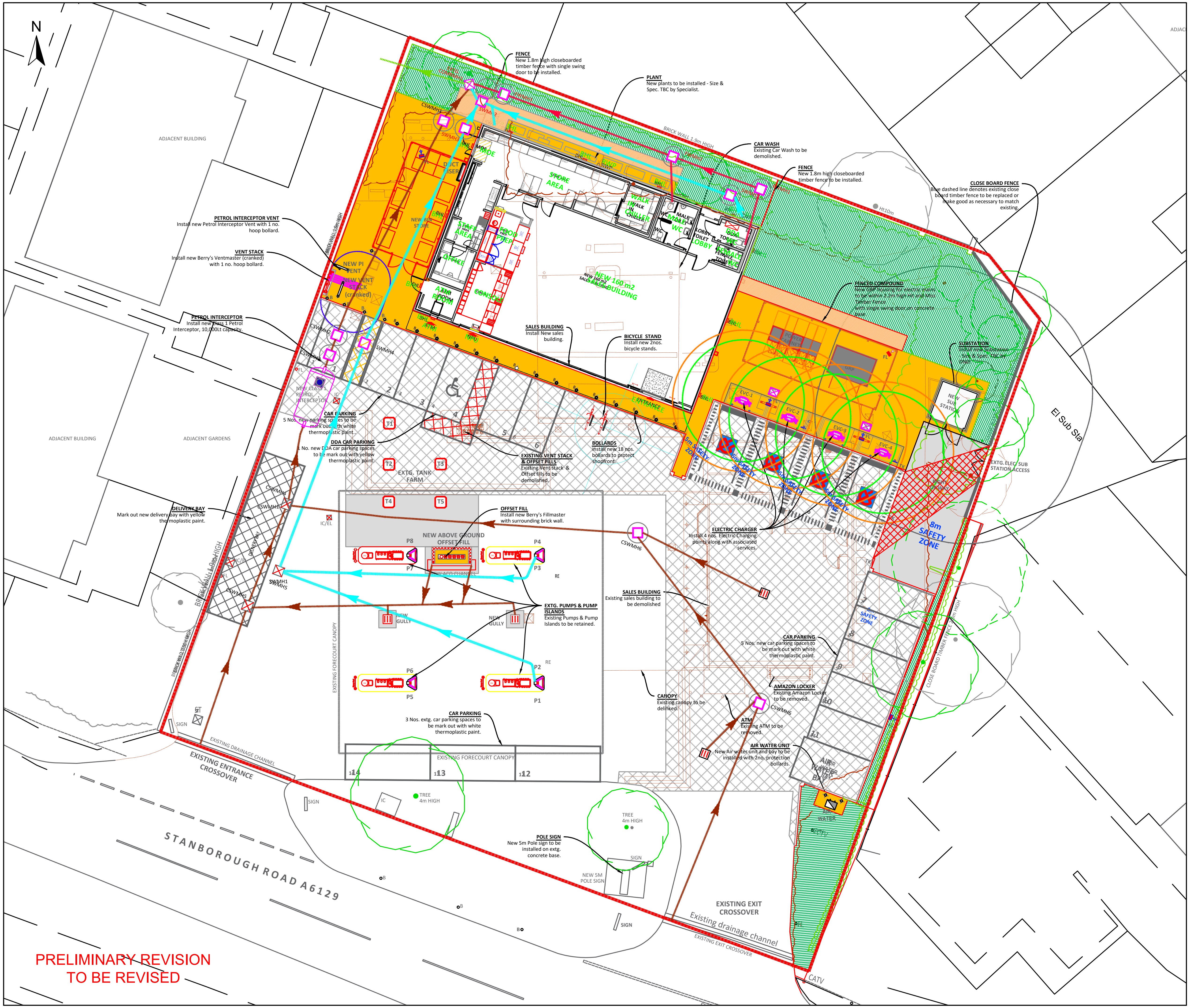
Client: Shell UK Oil Products Limited

Project Name: Shell Welwyn Garden

Description: Site Location Plan

Dimension	Size	Scale	Geolocation	Project ID	Drawing no.	Rev	File name
m	A4	1:25,000	523489, 212023	1922098	11101	C01	1922098-HH-111-SS-D-C-11101-C01



N
FENCE
New 1.8m high closeboarded timber fence with single swing door to be installed.
PLANT
New plants to be installed - Size & Spec. TBC by Specialist.
CAR WASH
Existing Car Wash to be demolished.
FENCE
New 1.8m high closeboarded timber fence to be installed.
CLOSE BOARD FENCE
Blue dashed line denotes existing close board timber fence to be replaced or make good as necessary to match existing.
PETROL INTERCEPTOR VENT
Install new Petrol Interceptor Vent with 1 no. hoop bollard.
VENT STACK
Install new Berry's Ventmaster (cranked) with 1 no. hoop bollard.
PETROL INTERCEPTOR
Install new Class 1 Petrol Interceptor, 10,000Lt capacity.
FENCED COMPOUND
SUBSTATION
SALES BUILDING
Install New sales building.
BICYCLE STAND
Install new 2nos. bicycle stands.
CAR PARKING
5 Nos. new parking spaces to be mark out with white thermoplastic paint.
DDA CAR PARKING
1 No. new DDA car parking spaces to be mark out with yellow thermoplastic paint.
EXISTING VENT STACK & OFFSET FILLS
Existing Vent stack & Offset fills to be demolished.
BOLLARDS
Install new 18 nos. bollards to protect shopfront.
DELIVERY BAY
Mark out new delivery bay with yellow thermoplastic paint.
OFFSET FILL
Install new Berry's Fillmaster with surrounding brick wall.
NEW ABOVE GROUND OFFSET FILL
ELECTRIC CHARGER
Install 4 nos. Electric Charging points along with associated services.
SALES BUILDING
Existing sales building to be demolished
EXTG. PUMPS & PUMP ISLANDS
Existing Pumps & Pump Islands to be retained.
CAR PARKING
5 Nos. new car parking spaces to be mark out with white thermoplastic paint.
AMAZON LOCKER
Existing Amazon Locker to be removed.
ATM
Existing ATM to be removed.
AIR WATER UNIT
New Air water unit and bay to be installed with 2no. protection bollards.
CANOPY
Existing canopy to be delined.
CAR PARKING
3 Nos. extg. car parking spaces to be mark out with white thermoplastic paint.
POLE SIGN
New 5m Pole sign to be installed on extg. concrete base.
NEW 160 m2 BUILDING
EXTG. TANK FARM
8m SAFETY ZONE
EXTG. ELEC SUB STATION ACCESS
El Sub Sta
ADJACENT BUILDING
ADJACENT GARDENS
EXISTING FOREcourt CANOPY
EXISTING ENTRANCE CROSSOVER
EXISTING DRAINAGE CHANNEL
STANBOROUGH ROAD A6129
EXISTING EXIT CROSSOVER
Existing drainage channel
CATV
PRELIMINARY REVISION
TO BE REVISED

LEGEND

Site boundary

Rev	Date	Amendment	Drawn	Chkd	Appd
C01	25.03.22	First Issue	AE	##	##

RSK GEOSCIENCES

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Client
Shell (UK) Oil Products Ltd

Project Name
Shell Welwyn Gardens

Description
Proposed Site Layout

Project ID	Drawing no.	Revision
1922098	22401	P01

File name
1922098-HH-224-SS-D-C-22401-P01

Dimensions	Scale	Size
m	1:250	A3

0 2 4 6 8 10m

APPENDIX A
SERVICE CONSTRAINTS

1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Shell UK Oil Limited (the "Client") in accordance with the terms of a contract [RSK Environment Standard Terms and Conditions] between RSK and the Client. The Services were performed by RSK with the reasonable skill and care ordinarily exercised by an environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the Client.

2. Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the Client. RSK is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.**

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the Client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the Client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials, unless specifically identified in the Services.

7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of information, including documentation, obtained from third parties and from the Client on the history and usage of the site, unless specifically identified in the Services or accreditation system (such as UKAS ISO 17020:2012 clause 7.1.6):

    a. The Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely.

    b. The Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection.

    c. The Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services.

    RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the Client and RSK.

8. The intrusive environmental site investigation aspects of the Services are a limited sampling of the site at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the properties of the materials adjacent and local conditions, together with the position of any current structures and underground utilities and facilities, and natural and other activities on site. In addition, chemical analysis

was carried out for a limited number of parameters (as stipulated in the scope between the client and RSK, based on an understanding of the available operational and historical information) and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

10. The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows, may vary from those reported due to seasonal, or other, effects and the limitations stated in the data should be recognised.

11. Asbestos is often observed to be present in soils in discrete areas. Whilst asbestos-containing materials may have been locally encountered during the fieldworks or supporting laboratory analysis, the history of brownfield and demolition sites indicates that asbestos fibres may be present more widely in soils and aggregates, which could be encountered during more extensive ground works.

12. Unless stated otherwise, only preliminary geotechnical recommendations are presented in this report and these should be verified in a Geotechnical Design Report, once proposed construction and structural design proposals are confirmed.

APPENDIX B
PLANNING PERMISSION CORRESPONDENCE

creating a better place

Environment Agency

Raymond Lee
Welwyn-Hatfield District Council
Development Control
The Campus
Welwyn Garden City
Hertfordshire
AL8 6AE

Our ref: NE/2021/133616/02-L01
Your ref: 6/2021/2260/FULL

Date: 5 November 2021

Dear Raymond,

Redevelopment of petrol station; including demolition of existing sales building, canopy link and car wash/jet washes, erection of a new sales building, provision of car parking spaces, provision of EV charging bays and associated plant, erection of a new bin store, retention of forecourt and canopy, and associated works.

Shell, Welwyn Garden City, Stanborough Road, Welwyn Garden City, AL8 6XA.

Thank you for consulting us on the above application which we received on 20 October. As part of the consultation we have reviewed the following information in support of this application:

- *Preliminary (Phase 1) site assessment report* – RSK Project No. 1922098 R02 dated October 2021.

Environment Agency Position
Based on the updated information provided in the above report we are now able to **withdraw the objection** from our previous letter (EA Ref: NE/2021/133616/01-L01 dated 9th September 2021) subject to the inclusion of the following seven planning conditions.

Without these conditions we feel that the development would pose an unacceptable risk to groundwater and we would object.

We ask to be consulted on the details submitted for approval to your authority to discharge these conditions and on any subsequent amendments/alterations.

Conditions
Condition 1 – Land Affected by Contamination
No development approved by this planning permission shall take place until a remediation strategy that includes the following components to deal with the risks associated with contamination of the site shall be submitted to and approved, in writing, by the local planning authority:

1. A preliminary risk assessment which has identified:

Cont/d..

- all previous uses
- potential contaminants associated with those uses
- a conceptual model of the site indicating sources, pathways and receptors
- potentially unacceptable risks arising from contamination at the site.

1. A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.
2. The results of the site investigation and the detailed risk assessment referred to in (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.
3. A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

Any changes to these components require the express written consent of the local planning authority. The scheme shall be implemented as approved.

Reason 1
The current use of the site as a petrol filling station presents a high risk of contamination that could be mobilised during construction to pollute controlled waters. Controlled waters are particularly sensitive at this location as:

- The site lies within a Source Protection Zone 3 (SPZ3)
- The site is underlain by a Secondary A Superficial aquifer (Kesgrave Catchment Subgroup) and a Principal Bedrock aquifer (Chalk)
- The site lies within a Water Framework Directive Groundwater body with 'poor' classification (Upper Lee Chalk GB40601G602900)

This condition will ensure that the development does not contribute to, and is not put at unacceptable risk from or adversely affected by, unacceptable levels of water pollution in line with paragraph 174 of the National Planning Policy Framework.

Condition 2 – Verification Report
No occupation of any part of the permitted development shall take place until a verification report demonstrating completion of works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met.

Reason 2
To ensure that the site does not pose any further risk to human health or the water environment by demonstrating that the requirements of the approved verification plan have been met and that remediation of the site is complete. This is in line with paragraph 174 of the National Planning Policy Framework.

Condition 3 - Long Term Monitoring and Maintenance Plan for Groundwater
No development should take place until a long-term monitoring and maintenance plan in respect of contamination including a timetable of monitoring and submission of reports to the Local Planning Authority, shall be submitted to and approved in writing by the Local Planning Authority. Reports as specified in the approved plan, including details of

any necessary contingency action arising from the monitoring, shall be submitted to and approved in writing by the Local Planning Authority. Any necessary contingency measures shall be carried out in accordance with the details in the approved reports. On completion of the monitoring specified in the plan a final report demonstrating that all long-term remediation works have been carried out and confirming that remedial targets have been achieved shall be submitted to and approved in writing by the Local Planning Authority.

Reason 3
To ensure that the site does not pose any further risk to the water environment by managing any ongoing contamination issues and completing all necessary long-term remediation measures. This is in line with paragraph 174 of the National Planning Policy Framework.

Condition 4 – Unidentified Contamination
If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until the developer has submitted a remediation strategy to the local planning authority detailing how this unsuspected contamination shall be dealt with and obtained written approval from the local planning authority. The remediation strategy shall be implemented as approved.

Reason 4
No investigation can completely characterise a site. This condition ensures that the development does not contribute to, is not put at unacceptable risk from, or adversely affected by, unacceptable levels of water pollution from previously unidentified contamination sources at the development site. This is in line with paragraph 174 of the National Planning Policy Framework.

Condition 5 – Borehole Management
A scheme for managing any borehole installed for the investigation of soils, groundwater or geotechnical purposes shall be submitted to and approved in writing by the local planning authority. The scheme shall provide details of how redundant boreholes are to be decommissioned and how any boreholes that need to be retained, post-development, for monitoring purposes will be secured, protected and inspected. The scheme as approved shall be implemented prior to the occupation of any part of the permitted development.

Reason 5
To ensure that redundant boreholes are safe and secure, and do not cause groundwater pollution or loss of water supplies in line with paragraph 174 of the National Planning Policy Framework and Position Statement N Groundwater resources of 'The Environment Agency's approach to groundwater protection'.

Condition 6 – Piling / Foundation works Risk Assessment with Respect to Groundwater Resources
Piling, deep foundations and other intrusive groundworks using penetrative measures shall not be carried out other than with the written consent of the local planning authority. The development shall be carried out in accordance with the approved details.

Reason 6
To ensure that any proposed piling, deep foundations and other intrusive groundworks do not harm groundwater resources in line with paragraph 174 of the National Planning Policy Framework and Position Statement N. Groundwater Resources of the 'The

Environment Agency's approach to groundwater protection'.

Condition 7 – Infiltration of Surface Water onto the Ground
No drainage systems for the infiltration of surface water to the ground are permitted other than with the written consent of the local planning authority. Any proposals for such systems must be supported by an assessment of the risks to controlled waters. The development shall be carried out in accordance with the approved details.

Reason 7
To ensure that the development does not contribute to, is not put at unacceptable risk from, or adversely affected by, unacceptable levels of water pollution caused by mobilised contaminants. This is in line with paragraph 174 of the National Planning Policy Framework.

Informative
Petrol filling station/fuel distribution
Good practice should be followed in the location, design, construction and maintenance of petrol stations and other fuel dispensing facilities. Due regard should be given to 'The Environment Agency's approach to groundwater protection' document, in particular the position statements and guidance in the section on the storage of pollutants (chapter D).

You should also refer to the following pollution prevention and mitigation guidance including:

- Guidance on Environmental Management at Petrol Filling Stations – Energy Institute
- Design, construction, maintenance and decommissioning of filling stations (also known as the Blue Book (APEA/EI) – Energy Institute – 2011
- Groundwater Protection Code – Petrol stations and other fuel dispensing facilities involving underground storage tanks – Defra Code of Practice
- CIRIA C736:Design of Containment Systems for the Prevention of Water Pollution

The Blue Book provides detailed information on the decommissioning (and investigation) of redundant tanks, risk assessment, the design and construction criteria and maintenance procedures which we expect to be implemented.
Further guidance can be found on the water management pages of gov.uk.

Advice
We recommend that developers should:

- Follow the risk management framework provided in Land Contamination: Risk Management (formerly CLR11), when dealing with land affected by contamination.
- Refer to the Environment Agency Guiding principles for land contamination for the type of information that we require in order to assess risks to controlled waters from the site. The Local Authority can advise on risk to other receptors, such as human health.
- Consider using the National Quality Mark Scheme for Land Contamination Management which involves the use of competent persons to ensure that land contamination risks are appropriately managed. The Planning Practice Guidance defines a "Competent Person (to prepare site investigation information): A person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant

professional organisation."(http://planningguidance.planningportal.gov.uk/blog/policy/achieving-sustainable-development/annex-2-glossary)
- Refer to the contaminated land pages on GOV.UK for more information.

We expect the site investigations to be carried out in accordance with best practice guidance for site investigations on land affected by land contamination. E.g. British Standards when investigating potentially contaminated sites and groundwater, and reference with these documents:

- BS5930:2015 Code of practice for site investigations;
- BS 10175:2011 A1:2013 Code of practice for investigation of potentially contaminated sites;
- BS ISO 5667-22:2010 Water quality. Sampling. Guidance on the design and installation of groundwater monitoring points;
- BS ISO 5667-11:2009 Water quality. Sampling. Guidance on sampling of groundwaters (A minimum of 3 groundwater monitoring boreholes are required to establish the groundwater levels, flow patterns but more may be required to establish the conceptual site model and groundwater quality. See RTM 2006 and MNA guidance for further details).
- BS ISO 18512:2007 *Soil Quality. Guidance on long-term and short-term storage of soil samples*
- BS EN ISO 5667:3- 2018. *Water quality. Sampling. Preservation and handling of water samples*
- Use MCERTS accredited methods for testing contaminated soils at the site.
- Guidance on the design and installation of groundwater quality monitoring points Environment Agency 2006 Science Report SC020093 NB. The screen should be located such that at least part of the screen remains within the saturated zone during the period of monitoring, given the likely annual fluctuation in the water table. In layered aquifer systems, the response zone should be of an appropriate length to prevent connection between different aquifer layers within the system.

A Detailed Quantitative Risk Assessment (DQRA) for controlled waters using the results of the site investigations with consideration of the hydrogeology of the site and the degree of any existing groundwater and surface water pollution should be carried out. The following should be considered:

- Use MCERTS accredited methods for testing contaminated soils at the site
- The DQRA report should be prepared by a “Competent person” (e.g. a suitably qualified hydrogeologist). The DQRA should be based on site-specific data, however in the absence of any applicable on-site data, a range of values should be used to calculate the sensitivity of the input parameter on the outcome of the risk assessment.
- Where groundwater has been impacted by contamination on site, the default compliance point for both Principal and Secondary aquifers is 50m. Further guidance is available at https://www.gov.uk/guidance/land-contamination-groundwater-compliance-points-quantitative-risk-assessments

Following the DQRA, a Remediation Options Appraisal to determine the Remediation Strategy in accordance with the Land Contamination: Risk Management guidance.

Any remediation strategy must be carried out by a competent person, in line with paragraph 183 of the National Planning Policy Framework. The National Planning Policy Framework defines a “Competent Person (to prepare site investigation): A person with a

recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation".

Where SUDs are proposed

Infiltration SUDs should not be located in unsuitable and unstable ground conditions such as land affected by contamination or solution features. Where infiltration SuDS are to be used for surface run-off from roads, car parking and public or amenity areas, they should have a suitable series of treatment steps to prevent the pollution of groundwater. For the immediate drainage catchment areas used for handling and storage of chemicals and fuel, handling and storage of waste and lorry, bus and coach parking or turning areas, infiltration SuDS are not permitted without an environmental permit. Further advice is available in the updated CIRIA SUDs manual http://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx

Waste off-site

Contaminated soil that is, or must be disposed of, is waste. Therefore, its handling, transport, treatment and disposal is subject to waste management legislation, which includes:

- Duty of Care Regulations 1991
- Hazardous Waste (England and Wales) Regulations 2005
- Environmental Permitting (England and Wales) Regulations 2010
- The Waste (England and Wales) Regulations 2011

Developers should ensure that all contaminated materials are adequately characterised both chemically and physically in line with British Standard BS EN 14899:2005 'Characterization of Waste - Sampling of Waste Materials - Framework for the Preparation and Application of a Sampling Plan' and that the permitting status of any proposed treatment or disposal activity is clear. If in doubt, the Environment Agency should be contacted for advice at an early stage to avoid any delays.
If the total quantity of waste material to be produced at or taken off site is hazardous waste and is 500kg or greater in any 12 month period the developer will need to register with us as a hazardous waste producer. Refer to the waste management page on GOV.uk for more information.

Material Re-use on-site

The CL:AIRE Definition of Waste: Development Industry Code of Practice (Version 2) provides operators with a framework for determining whether or not excavated material arising from site during remediation and/or land development works are waste or have ceased to be waste. Under the Code of Practice:

- excavated materials that are recovered via a treatment operation can be re-used on-site provided they are treated to a standard such that they fir for purpose and unlikely to cause pollution
- treated materials can be transferred between sites as part of a hub and cluster project
- some naturally occurring clean material can be transferred directly between sites Developers should ensure that all contaminated materials are adequately characterised both chemically and physically, and that the permitting status of any proposed on-site operations are clear. If in doubt the Environment Agency should be contacted for advice at an early stage to avoid any delays.

We recommend that developers should refer to:

- The position statement on the Definition of Waste: Development Industry Code of Practice
- The waste management page on GOV.uk

Final comments
Thank you for contacting us regarding the above application. Our comments are based on our available records and the information submitted to us. Please quote our reference number in any future correspondence. Please provide us with a copy of the decision notice for our records. This would be greatly appreciated.

Should you have any queries regarding this response, please do not hesitate to contact me.

Yours sincerely,

George Lloyd
Planning Advisor

Number: +44 20302 54843
E-mail: HNLSustainablePlaces@environment-agency.gov.uk

End

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20th December 2021
Our ref.: 1922098 L01 (00)
Your ref.: NE/2021/133616/02-L02
Site SAP ID 12038629

HNL Sustainable Places Planning Advisor
Environment Agency
Bessemer Road
Welwyn Garden City
Hertfordshire
AL7 1HE

For the attention of: Mr George Lloyd

Dear Mr Lloyd

SHELL WELWYN GARDEN PLANNING APPLICATION 6/2021/2260/FULL
REVIEW OF PLANNING CONDITIONS

This letter is in response to the Environment Agency's position on the proposed construction works at Shell Welwyn Garden, and the recent planning conditions recommended to be applied to Planning Application 6/2021/2260/FULL.

1. BACKGROUND AND PLANNING

An application (reference 6/2021/2260/FULL) was submitted to Hertfordshire County Council by Shell UK Oil Products Limited (Shell) representatives pertaining to the Shell Welwyn Garden fuel retail station located on Stanborough Road, Welwyn Garden City, AL8 6XA, for:

Redevelopment of petrol station; including demolition of existing sales building, canopy link and car wash/ jet washes, erection of a new sales building, provision of car parking spaces, provision of EV charging bays and associated plant, erection of a new bin store, retention of forecourt and canopy, and associated works.

The primary purpose of the proposed works is the relocation and extension of the site shop. The demolition and rebuild of the shop will enable the provision of new car parking spaces, including EV charging bays. The works do not include any changes to the existing petrol tanks or fuel dispensing infrastructure.

We note that you are now able to withdraw your objection from your previous letter to Raymond Lee from Welwyn-Hatfield District Council (Environment Agency's Ref: NE/2021/133616/01-L01 dated 9th September 2021) subject to the inclusion of seven Planning Conditions, without which you feel that the development would pose an unacceptable risk to groundwater, causing you to object to the aforementioned Planning Application.

In summary, those proposed Planning Conditions are as follows:

2. CONDITION 1 – LAND AFFECTED BY CONTAMINATION

No development approved by this planning permission shall take place until a remediation strategy that includes the following components to deal with the risks associated with contamination of the site shall be submitted to and approved, in writing, by the local planning authority:

1. *A preliminary risk assessment which has identified:*
    - *all previous uses;*
    - *potential contaminants associated with those uses;*
    - *a conceptual model of the site indicating sources, pathways and receptors; and*
    - *potentially unacceptable risks arising from contamination at the site.*
1. *A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.*
2. *The results of the site investigation and the detailed risk assessment referred to in (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.*
3. *A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.*

3. CONDITION 2 – VERIFICATION REPORT

No occupation of any part of the permitted development shall take place until a verification report demonstrating completion of works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met.

4. CONDITION 3 - LONG TERM MONITORING AND MAINTENANCE PLAN FOR GROUNDWATER

No development should take place until a long-term monitoring and maintenance plan in respect of contamination including a timetable of monitoring and submission of reports to the Local Planning Authority, shall be submitted to and approved in writing by the Local Planning Authority. Reports as specified in the approved plan, including details of any necessary contingency action arising from the monitoring, shall be submitted to and approved in writing by the Local Planning Authority. Any necessary contingency measures shall be carried out in accordance with the details in the approved reports. On completion of the monitoring specified in the plan a final report demonstrating that all long-term remediation works have been carried out and confirming that remedial targets have been achieved shall be submitted to and approved in writing by the Local Planning Authority.

5. CONDITION 4 – UNIDENTIFIED CONTAMINATION

If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until the developer has submitted a remediation strategy to the local planning authority detailing how this unsuspected contamination shall be dealt with and obtained written approval from the local planning authority. The remediation strategy shall be implemented as approved.

6. CONDITION 5 – BOREHOLE MANAGEMENT

A scheme for managing any borehole installed for the investigation of soils, groundwater or geotechnical purposes shall be submitted to and approved in writing by the local planning authority. The scheme shall provide details of how redundant boreholes are to be decommissioned and how any boreholes that need to be retained, post-development, for monitoring purposes will be secured, protected and inspected. The scheme as approved shall be implemented prior to the occupation of any part of the permitted development.

7. CONDITION 6 – PILING / FOUNDATION WORKS RISK ASSESSMENT WITH RESPECT TO GROUNDWATER RESOURCES

Piling, deep foundations and other intrusive groundworks using penetrative measures shall not be carried out other than with the written consent of the local planning authority. The development shall be carried out in accordance with the approved details.

8. CONDITION 7 – INFILTRATION OF SURFACE WATER ONTO THE GROUND

No drainage systems for the infiltration of surface water to the ground are permitted other than with the written consent of the local planning authority. Any proposals for such systems must be supported by an assessment of the risks to controlled waters. The development shall be carried out in accordance with the approved details.

Acting on behalf of Shell, RSK are seeking to modify or provide information to assist in discharging the proposed conditions in relation to groundwater set out in your recent letter to Mr Lee dated 5 November 2021 (ref.: NE/2021/133616/02-L01), due to the reasons set out below. If agreeable to yourself to expedite the planning process, a paid for consultation with the Environment Agency could be agreed.

9. CONCEPTUAL SITE MODEL

RSK's updated Phase 1 preliminary risk assessment (ref.: GB-12038629-20211008-SA-P1_v2, dated October 2021) outlined the following conceptual site model (CSM):

9.1.1 Geology and Hydrogeology

The Environment Agency's view on the sensitivity of Controlled Waters at this location is noted given that the site:

- lies within a Source Protection Zone 3 (SPZ3);

- is underlain by a Secondary A Superficial aquifer (Kesgrave Catchment Subgroup) and a Principal Bedrock aquifer (Chalk); and
- lies within a Water Framework Directive Groundwater body with 'poor' classification (Upper Lee Chalk GB40601G602900).

According to the British Geological society website, the site lies on the geological boundary between two superficial drift deposits - the Kesgrave Catchment subgroup (Secondary A aquifer) and the Lowestoft Formation (a Secondary undifferentiated aquifer), both overlying the Chalk (Principal aquifer).

BGS borehole data indicates limited groundwater has been encountered in the vicinity of the site. Boreholes TL21SW90 and TL21SW89 that lie at 90.31 m AOD and 89.9 m AOD, respectively, and completed to 23.3 m bgl and 18.3 m bgl (below ground level), respectively, did not encounter groundwater. Copies of the BGS borehole logs are presented in **Appendix A**.

Given this scenario - the site sitting at approximately 87.19 m AOD - from the above records RSK would anticipate groundwater lying at below 20 m bgl.

Groundwater is currently assumed to flow in a south/south westerly direction towards the River Lea, whilst the closest use of groundwater for domestic supply is a private abstraction located approximately 1,500 m to the north of the site.

9.1.2 Site Infrastructure

The Shell engineering database indicates the site was re-tanked in 1994 with double skin tanks installed and old tanks removed. The site current operates one single skin and five double skin tanks. Pressure testing of all tanks and pipework in September 2017 indicated all infrastructure to be leak-tight.

This site is currently under the Fairbanks' real time (constant) monitoring service which collects data directly from the electronic tank gauge and the point of sale. Fairbanks records indicate a loss of <10 litres from pump 5 unleaded (May 2016) was found during a performance investigation. After corrective works were carried out to amend the fault, no additional issues were noted. An additional investigation into tank 4 Unleaded in November 2016 identified a <10 litre loss from pumps 3 and 4 Unleaded. No additional issues were noted after corrective works were carried out. They expressed no ongoing concerns relating to tank performance. Such losses would have been contained within secondary containment arrangements of fuel dispensers and actual loss to ground would have been unlikely. At the time of correspondence (November 2021) there are no ongoing concerns relating to tank performance and, as such, the tanks are considered leak-tight (included in **Appendix B**).

10. PROPOSED SITE INVESTIGATION

RSK have considered the recommended planning conditions outlined in your recent aforementioned letter to Mr Lee at Welwyn-Hatfield District Council, and have thoroughly examined information pertaining to the site and its surrounds in order to demonstrate that the risks posed to groundwater resources could be satisfactorily managed during the redevelopment.

As groundwater is anticipated to be at depth beneath the site, to protect the underlying Principal aquifer RSK are not recommending the construction of monitoring wells for groundwater sampling at the site.

Rather 'shallow' wells to determine ground conditions beneath the site for soil and vapour monitoring.

A proposed scope of work for an intrusive site investigation of the site (Condition 1) is detailed in Section 3.1.1, below.

10.1.1 Proposed site Investigation scheme

RSK propose a comprehensive site assessment in response to the data gaps or areas of uncertainty that were identified in the aforementioned preliminary risk assessment. This intrusive site assessment would comprise the following:

a) Drilling and installation of 5No. monitoring wells to prove the geology to a nominal depth of 6.0 m bgl and for the collection of soil and soil vapour samples across the site (plus groundwater should it be encountered), and an additional shallow monitoring well to a depth of approximately 1.5 m bgl (or until the base of made ground is encountered) in the location of the proposed shop footprint – where the office and staff area are proposed to be located (6No. Monitoring wells in total). The proposed locations are shown on the attached figure. Safe drilling (aquifer protection) will be employed due to the sensitivity of the underlying Secondary A Superficial aquifer (Kesgrave Catchment Subgroup) and Principal Bedrock aquifer (Lewes Nodular and Seaford Chalk Formations);

b) Soil vapour monitoring wells will comprise a single installation at each location. Response zones are expected to be installed to target a single geological unit;

c) Potable water testing from the taps at the site shop and analysis to evaluate the potential risk to drinking water supply pipes;

d) Should groundwater be encountered, all newly installed monitoring wells will be developed prior to sampling with all purged water to be disposed of using the site's drainage system and interceptor where present;

e) Completion of one soil vapour monitoring visit at least one week following well development to collect soil vapour samples via low-flow sampling methodology from all new monitoring boreholes for the identification of soil vapour concentrations at the site boundaries closest to residential and commercial receptors and under the footprint of the new shop;

f) Should groundwater be encountered, a groundwater monitoring visit will be undertaken to confirm the anticipated hydrogeology beneath the site, including flow direction and hydraulic gradients, and to collect groundwater samples via low flow sampling methodology from all new monitoring boreholes;

g) Chemical analysis of selected soil, soil vapour (and potentially groundwater) samples for retail petroleum analytes specific to the linkages still considered as potentially complete following RSK's Preliminary (Phase 1) site assessment report;

h) A comprehensive site assessment report inclusive of the results of the intrusive investigation, all soil and soil vapour chemical data. The report will present a refinement of the conceptual site

model and generic quantitative risk assessment of potential pollutant linkages where relevant; and

i) If warranted, a Detailed Quantitative Risk Assessment (DQRA) for controlled waters using the results of the site investigations with consideration of the hydrogeology of the site and the degree of any existing groundwater and surface water pollution would be carried out.

Site investigations and subsequent monitoring would be carried out in accordance with best practice guidance for investigating potentially contaminated sites. However, as discussed in Section 2.1.1, RSK would not generally advise our client to drill deep boreholes into a sensitive aquifer in order to intercept groundwater on a petrol station site, so to avoid the creation of a new potential pollution pathways. Furthermore, as noted in Section 2.1.1, there are no ongoing concerns relating to tank performance and, as such, the tanks are considered leak-tight and not to pose significant risks to the underlying aquifer.

As also stated in Section 3.1.1f, should groundwater be encountered within the proposed 6.0 m investigation depth, a groundwater monitoring visit will be undertaken to confirm the anticipated hydrogeology beneath the site, including flow direction and hydraulic gradients, and to collect groundwater samples from all new monitoring boreholes.

Should the initial round of ground gas monitoring (and groundwater monitoring if applicable) indicate the potential for on-going concern, a long term monitoring and maintenance plan for the monitoring boreholes, incorporating a timetable of monitoring and submission of reports to the Local Planning Authority, will be submitted to and approved in writing by the Local Planning Authority (Condition 3). Borehole management and the potential decommissioning of any boreholes would form part of any a long term monitoring and maintenance plan (Condition 5).

Arisings from the borehole drilling will be adequately characterised for waste disposal purposes, and remain in secure location on site awaiting results prior to disposal via a licenced waste carrier to an appropriate waste receiving facility. Material re-use on-site is not proposed on this site due to the limited excavation proposed.

RSK consider the soil sampling, soil vapour monitoring, and potable water testing proposed in Section 3 to be adequate to enable an assessment to be undertaken of potential risks posed by retail petroleum and non-retail petroleum COPC to:

- the permeation of plastic pipework impacting potable water supply;
- the volatilisation, migration and inhalation of vapours impacting both on-site and off-site residential receptors, and neighbouring commercial receptors; and
- Risks to groundwater at depth can be assessed through a lines of evidence approach depending on site observations and chemical analysis results.

11. PROPOSED PLANNING CONDITIONS

11.1 Conditions 1 and 3 (pre-commencement conditions)

RSK are seeking agreement that the following information can be regarded as partially discharging Condition 1:

- A preliminary risk assessment (ref.: GB-12038629-20211008-SA-P1_v2, dated October 2021) has already been submitted; and
- A site investigation scheme is set out in this letter (Section 3.1.1 and appended Figure).

A report will be submitted of works undertaken, with comparison of results to RSK Generic Assessment Criteria for continued oil land use scenario. If applicable, a DQRA and waste characterisation and disposal will also be discussed.

In order to discharge the remaining requirements of Condition 1 (options appraisal, remediation strategy and verification plan) RSK propose to prepare an Environmental Strategy Plan (ESP), the purpose of which is to support the environmental aspects of the planning process related to soil and groundwater and to include provisions for managing potential environmental liabilities associated with soil and groundwater at the site during the redevelopment works.

It is considered that a long term monitoring and maintenance plan for groundwater (as required in Condition 3) will only be appropriate if groundwater is encountered in the proposed monitoring wells (ie at depth <6 m) and in this case it will be included within the ESP.

11.2 Conditions 2, 4 and 5

Following completion of the measures identified in the approved remediation scheme, a validation (or verification) plan and report would be submitted to and approved in writing by the LPA in accordance with Condition 2 (*Verification Report*).

This will include details of decommissioning of any boreholes not required for long term monitoring (as required by Condition 5).

Condition 4 relating to *Unidentified Contamination*.. It is feasible that during the works, contamination may be encountered in the ground that was not identified or inferred during RSK's Preliminary (Phase 1) site assessment report. A major function of the ESP described in the previous section is to make provision for dealing with such eventualities.

In the event that unforeseen contamination that is found at any time when carrying out the approved development, it would be reported in writing immediately to the Local Planning Authority (LPA). An assessment would be undertaken in accordance with the requirements of Condition 4 or otherwise agreed in writing and, where remediation is necessary, a remediation scheme, together with a timetable for its implementation would be submitted to and approved in writing by the LPA.

11.3 Condition 6 and 7

Other than the outlined investigation works, there are not proposed to be any deep foundation or piling works (under the terms of this standard condition). Standard foundation depths are 1.5-2.0 m for sales building; 1.0-1.5 m for canopy foundations; and approximately 1.5-2.0 m for all underground services (ducts & drainage etc).

RSK understand that all drainage matters at the site have been pre-covered between the LPA and the planning consultant for the site, Jackie Ford from JMS Planning & Development. The proposed schematic drainage layout drawing, included as **Appendix C**, confirms that all surface water goes off-site rather than to ground.

12. TIMESCALE

The following timescale and sequence is proposed for the works:

19th January 2022 **Intrusive site investigation**.

March 2022 **Comprehensive site investigation report** - Summary report of RSK works undertaken with comparison of results to RSK Generic Assessment Criteria for continued oil land use scenario. If applicable, a DQRA and waste characterisation and disposal will also be discussed.

March 2022 **Environmental Strategy Plan**.

The above timings are preliminary and may change according to the construction program and conditions encountered on site.

RSK trust that the detail provided herein is sufficient to gain further understanding of the works proposed at the site, and modify or discharge the proposed conditions in relation to groundwater set out in your recent aforementioned letter to Mr Lee at Welwyn-Hatfield District Council.

Please do not hesitate to contact either of the undersigned if you have any queries or wish to discuss further.

Yours sincerely,

For RSK Environment Ltd

Johanna Houlahan
Principal Geo-Environmental Consultant

Sophie Penney
Associate Director Consultant

Attachments:

Figure - Proposed Monitoring Well Locations

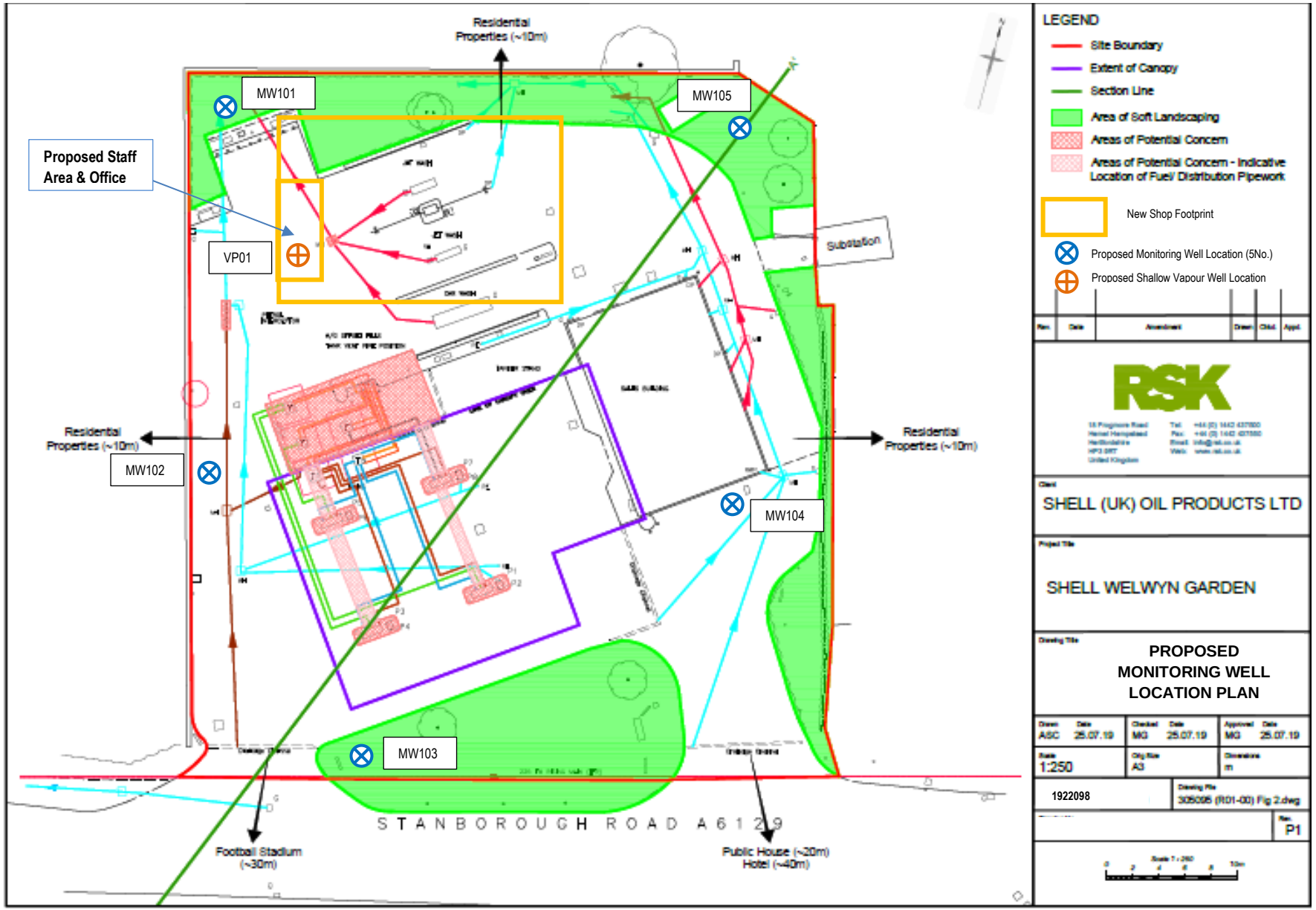
Appendix A - BGS Borehole Logs

Appendix B - Fairbanks Wetstock Documents

Appendix C - Proposed Schematic Drainage Layout

FIGURES

Shell Welwyn Garden City – Proposed MW & VP Locations 2021



APPENDIX A
BGS BOREHOLE LOGS

TL 21 SW/89

TERRESEARCH LIMITED

BOREHOLE NO. 1

Contract Name Welwyn — Report No. S. 597/13

Client Hertfordshire County Council — Site Address 20th Mile Bridge,

Address Through Robert F. Earley & Partners — Off Rooks Hill,

Consulting Engineers, — Welwyn Garden City

London, S.W.1.

Standing Water Level — Diameter 8"

Water Struck None — Method of Boring Shell/Auger

Ground Level 294.9 (89-88 SW) — Start 6.12.63 Finish 10.12.63

Remarks:

Description of Strata	Thickness	Depth	Disturbed Samples	'U' Cores and 'N' P. Test
Made ground	1'0"	1'0"	J4859 0'6"	
Brown clay with stones and some chalk	14'0"	15'0"	J4860 2'6" J4862 7'6" J4864 12'6"	U4861 5'0" U4863 10'0"
Sand with some gravel	9'6"	24'6"	B4865 15'0" J4866 17'6" B4867 20'0" J4868 22'6"	15'0" N = 29 20'0" N = 25
Brown clay with stones and some chalk	2'6"	27'0"		U4869 25'0"
Sandy gravel	19'0"	46'0"	J4870 27'6" B5871 30'0" J4832 32'6" B4833 25'0" J4834 37'6" B4835 40'0" J4836 42'6" B4837 45'0"	30'0" N = 63 for 9" 35'0" N = 52 for 6" 40'0" N = 70 for 9" 45'0" N = 29
Large Gravel and flints	2'0"	48'0"	B4838 47'6"	
Lumps of hard chalk and flints in a matrix of softer chalk	12'0"	60'0"	J4840 53'0" J4842 60'0"	U4839 50'0" 51'6" N = 45 U4841 57'0" 58'6" N = 49
TOTALS	60'0"	60'0"		

NOTES: 1. Descriptions are given in accordance with the B.S. Civil Engineering Code of Practice C.P.2001 "Site Investigations"
2. J indicates Jar Samples.
B ,, Bulk Samples.
W ,, Water Samples.

TC 21 SW 19/9

TERRESEARCH LIMITED

BOREHOLE NO. 3

Contract Name Welwyn — Report No. S. 597/13

Client Hertforshire County Council — Site Address 20th Mile Bridge,

Address Through Robert F. Earley & Partners — Off Rooks Hill

Consulting Engineers, — Welwyn Garden City.

London, S.W.1.

Standing Water Level — Diameter 8"

Water Struck None — Method of Boring Shell/Auger

Ground Level 296.3 (90.31) — Start 2.12.62 — Finish 5.12.63

Remarks:

Description of Strata	Thickness	Depth	Disturbed Samples	'U' Cores and 'N' P. Test
Brown clay and flints	3'6"	3'6"	J4802 2'6"	
Brown clay, flints and chalk	6'6"	10'0"	J4804 7'6"	U4803 3'6" U4805 8'6"
Sand and gravel	16'0"	26'0"	B4806 12'6" J4807 15'0" B4808 17'6" J4809 20'0" B4810 22'6" J4811 25'0"	15'0" N = 28 20'0" N = 25
Gravely clay with pieces of chalk	1'6"	27'6"		U4812 26'0"
Sand and gravel	10'0"	37'6"	B4813 30'0" J4814 32'6" B4815 35'0" B4816 37'6"	30'0" N = 57 for 6" 35'0" N = 52 for 6"
Large gravel and flints	7'6"	45'0"	B4817 40'0" J4818 42'6"	40'0" N = 15
Chalk and large chalk and flints in a matrix of softer chalk	31'6"	76'6"	J4820 48'6" J4822 52'6" J4824 57'6" J4826 62'6" J4828 67'6" J4829 70'0" J4831 76'6"	U4819 46'0" U4821 50'0" U4823 55'0" U4825 60'0" U4827 65'0" 70'0" N = 96 U4830 73'6" 75'0" N = 105
TOTALS	76'6"	76'6"		

NOTES: 1. Descriptions are given in accordance with the B.S. Civil Engineering Code of Practice C.P.2001 "Site Investigations"

2. J indicates Jar Samples.

B " Bulk Samples.

W " Water Samples.

U " Undisturbed Core Samples. These are nominal 4 in. diam. and 18 in. long. Depths shown are top of sample.

N " Number of blows per ft. penetration with Standard Penetration Test.

APPENDIX B
FAIRBANKS WETSTOCK DOCUMENTS

Dover Fueling Solutions,
The Technology Management
Centre, Moss Lane View,
Skelmersdale, WN8 9TN
P: +44 1695 52175
doverfuelingsolutions.com

Site Performance – Shell Budgens Welwyn Garden (12038629)

Fairbanks Environmental Limited has been monitoring Shell Budgens Welwyn Garden since February 2013.

Fairbanks are a global market leader in remote wetstock management using our in-house loss detection system which is accredited to the US Environmental Protection Agency standard for Statistical Inventory Reconciliation.

This site is currently under the Fairbanks' real time service which collects data directly from the electronic tank gauge and the point of sale. This data includes any active gauge alarms, the start and end time of each transaction, the volume dispensed and the corresponding change in tank stock level. The data is polled every 15 minutes and relayed via broadband to Fairbanks' secure severs in Lancashire, England, UK.

The data is analysed using a pre-defined set of thresholds which trigger alerts for the Fairbanks Wetstock Analysis team to escalate to the customer should any anomalies be detected.

All data supplied from the site has been assumed to be correct and we have no current or on-going concerns over the performance of any of the tanks at site.

Historic Investigations

December 2015 – The Real Time data highlighted drainback to a quantity of 11 litres for pumps 7,8 Diesel. Pump checks were completed with the root cause being the gaskets requiring replacement. Once completed, no further issues were noted.

May 2016 – A performance investigation was opened in relation to Tank 4 FuelSave Unleaded with a site visit raised to conduct pump measure checks. During the visit it was noted that pumps 1, 3 and 5 were over-measuring resulting in these being re-set and verified thereafter. No additional concerns were noted.

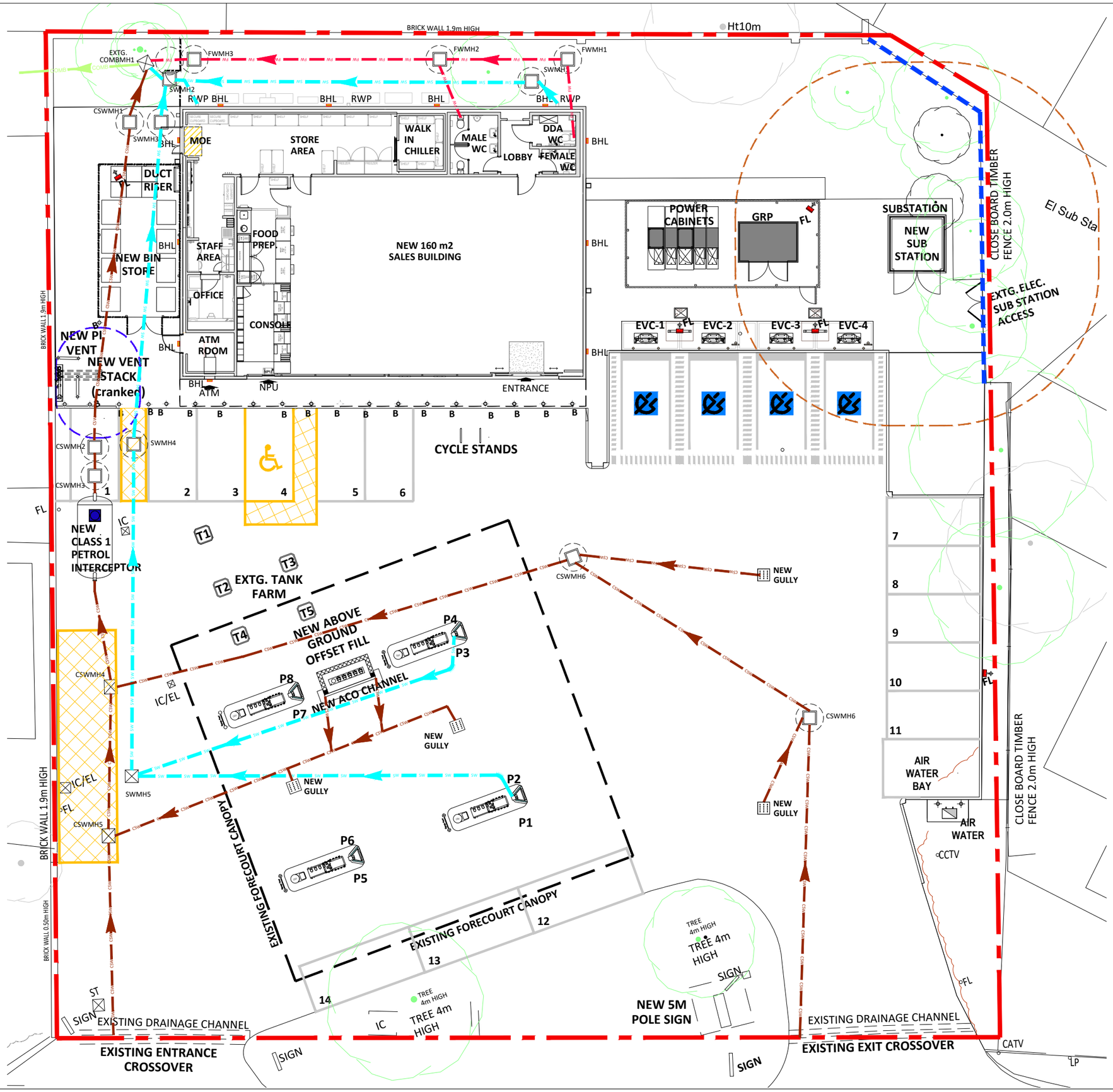
November 2016 – A performance investigation was opened in relation to Tank 4 FuelSave Unleaded with a site visit raised to conduct pump measure checks. During this visit, pumps 3,4 were identified as having a small leak on the back of the pumping unit. This was quantified as 10 litres, with the pumps replaced thereafter and no additional concerns noted.

February 2018 – A performance investigation was opened in relation to Tank 2 FuelSave Diesel and following a site visit for pump measure checks, no issues were identified with the root cause being identified as the ATG going into an auto-calibration phase and altering the data.

Kind Regards

Adam Lowe
Customer Services Manager
Fairbanks Environmental Ltd.

APPENDIX C
PROPOSED SCHEMATIC DRAINAGE LAYOUT



NOTATION AND SPECIFICATION :

- MH = Manhole
- MW = Monitoring well
- SU = Drainage channel sump
- G = Gulley
- CV = Closure valve
- Storm Water Sewer (Blue)
- Storm Water Sewer (Brown)
- Foul Water Sewer (Red)
- Combined Water Sewer (Green)

GENERAL NOTES

THIS DRAWING HAS BEPREPARED FOR PLANNING PURPOSES ONLY.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING:

12038629	LP	-	LOCATION PLAN
12038629	BP	-	BLOCK PLAN
12038629	ESL	-	EXISTING SITE LAYOUT- 1:200
12038629	ESL	-	EXISTING SITE LAYOUT- 1:100
12038629	ESE	-	EXISTING SITE ELEVATIONS
12038629	PSL	-	PROPOSED SITE LAYOUT - 1:200
12038629	PSL	-	PROPOSED SITE LAYOUT - 1:100
12038629	PSE	-	PROPOSED SITE ELEVATIONS
12038629	ESBL	-	EXISTING SALES BUILDING LAYOUT
12038629	PSBL	-	PROPOSED SALES BUILDING LAYOUT
12038629	ESBE	-	EXISTING SALES BUILDING ELEVATION
12038629	PSBE	-	PROPOSED SALES BUILDING ELEVATION

SCALE BAR 1:200@A3

0 1 2 3 4 5 6 7 8 9 10

METERS

PROJECT MANAGERS : ARTELIA Passion & Solutions

DESIGNERS : mbh

MBH Design Studio Ltd.
Rosemount House, Rosemount Avenue, West Byfleet, Surrey, KT14 6LB
www.mbhltd.com t: 01932 352 727 f: 01932 351 545

PHASE : PLANNING

REV	DATE		BY

PROJECT : SHELL WELWYN GARDEN
STANBOROUGH ROAD,
WELWYN GARDEN CITY AL8 6XA

TITLE : PROPOSED SCHEMATIC DRAINAGE LAYOUT

SHELL UK OIL PRODUCTS LTD.
SHELL CENTRE, YORK ROAD,
LONDON, SE1 7NA
UNITED KINGDOM

DRAWN BY :	MMKVE	SCALE :	1:200@A3
DATE :	08.11.2021	PLOT DATE :	08.11.2021
CAD FILE :	E:\ARCHIVE\13801\DRAWING\Welwyn Garden 12038629-PLG-FCT-21		

DWG No :	12038629	PSDL	21	

A3
ORIGINAL PLOT SIZE

From:	HNL Sustainable Places
To:	Johanna Houlahan
Subject:	RE: Consultation on redevelopment of Shell Welwyn Garden retail petroleum site, Hertfordshire.
Date:	05 January 2022 13:44:18
Attachments:	image001.png image002.jpg

Good morning Johanna,

I've discussed this with our Groundwater team and we have no specific objections to the proposed site investigation scheme.

It's noted that the exact testing suite for soil and groundwater monitoring hasn't been specified. We'd expect this to include the previously identified COPC. We'd also expect site investigation to identify any NAPL at the site. We believe these points were covered in the conclusions section of the Phase 1 preliminary report.

We look forward to seeing the results of the site investigation, and will be able to provide detailed comments once this has been formally submitted at the planning stage.

Kind regards

George Lloyd

From: Johanna Houlahan [mailto:JHoulahan@rsk.co.uk]
Sent: 20 December 2021 17:05
To: HNL Sustainable Places <HNLSustainablePlaces@environment-agency.gov.uk>
Cc: JMS Planning - Jackie Ford <jackie@jmsplanning.com>; Sophie Penney <SPenney@rsk.co.uk>; r.lee@welhat.gov.uk
Subject: Consultation on redevelopment of Shell Welwyn Garden retail petroleum site, Hertfordshire.

22/12: Forwarded to Alex Coates for advice

Your Ref. NE/2021/133616/02-L01
Welwyn-Hatfield District Council Planning Ref. 6/2021/2260/FULL
HCC Ref. WH/8633/2021

For the attention of Mr George Lloyd - Planning Advisor

Dear Mr Lloyd

RSK are working on behalf of Shell UK Oil Products Ltd to assess the environmental status of the Shell Welwyn Garden retail petroleum site located on Stanborough Road, Welwyn Garden City, AL8 6XA.

The attached letter is in response to your letter to Raymond Lee from Welwyn-Hatfield District Council (Your Ref: NE/2021/133616/02-L01 dated 9th September 2021). The letter aims to engage with yourselves to agree the scope of proposed site investigation works (including the requirement for future groundwater monitoring) designed to investigate data gaps or potentially complete pollutant linkages identified at the initial conceptual site model stage (as presented in RSK's Phase 1 preliminary risk assessment - Ref. GB-12038629-20211008-SA-P1_v2, dated October 2021), and ultimately demonstrate that the risks posed to groundwater resources could

be satisfactorily managed during the redevelopment.

Link to attached letter if required: https://we.tl/t-aENESZP0eJ

An intrusive site investigation is currently scheduled to commence on 19th January 2022, so a response at your earliest convenience would be appreciated.

Please do not hesitate to contact me if you have any queries or wish to discuss further.

Kind regards,
Johanna

Johanna Houlahan BSc MSc FGS
Principal Geo-environmental Consultant

My working days are Monday to Thursday from 8:30am-4:30pm (mainly working from home)

18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT, UK

Mobile: +44 (0)7758 251679
email: JHoulahan@rsk.co.uk

http://www.rsk.co.uk

APPENDIX C
SAMPLING METHODOLOGY

SAMPLING METHODOLOGY

INTRODUCTION

This method statement describes RSK's procedures adopted during excavation works at Shell petroleum retail sites. It does not form a substitute for preparation of, separate site specific healthy and safety plans, job hazard analyses and safety risk assessments. Such aspects of the works are dealt with via RSK and Shell procedures and are not reproduced herein.

The method statement is applicable to attendance at a Shell owned petroleum retail site by a RSK environmental consultant engineer during excavation works for purposes such as removal of underground storage tanks (USTs), interceptors and other underground fuel infrastructure, which have the potential to act as primary sources of hydrocarbon release into the ground.

The objective of RSK's attendance is to provide an oversight of the works by a competent environmental professional at a time when ground conditions below the surface are revealed by excavations for redevelopment or civil engineering purposes, in particular at locations that could not safely be investigated during a phase 2 ground investigation whilst the site was operational.

The excavation work affords an opportunity to obtain information to supplement ground investigation data, including:

- geological information
- observations of groundwater
- information on the presence (or not) of hydrocarbons in the ground immediately surrounding sub surface fuel infrastructure
- the opportunity to obtain samples of soil at the limits of excavations, and for waste disposal purposes.

SAMPLING AND FIELD TESTS

Plant will be supplied by the contractor undertaking groundwork at the site, and for the purposes of soil sampling will be under the direct supervision of the RSK engineer.

Samples will be taken by the RSK engineer and headspace analyses will be screened on site with a photo ionisation detector (PID). The data will be used, along with visual and olfactory evidence to focus subsequent laboratory analytical testing on those samples apparently most representative of the soils exhibiting hydrocarbons at the limits of excavations or for waste disposal purposes.

Samples obtained at the limits of excavations (i.e. representing the condition of the ground left in situ) have depth and position recorded. Sample positions are recorded either by surveying or by triangulation from fixed features which can be related to site plans.

RSK's technical procedures govern sampling and the packaging and shipment of samples to the appointed analytical laboratory. The recovered soil samples are placed in containers suitable for the intended analyses and stored in a cool box with ice-packs to minimise temperature and volatilisation. Samples are forwarded to the laboratory as soon as practicable (but typically daily) to minimise holding times prior to analysis.

Each soil sample will be given a unique identifier and entered onto the chain of custody documentation. A copy of the chain of custody documentation accompanies the samples with a copy being retained by RSK.

Samples are not obtained by person entry to excavations under any circumstances, unless the groundwork contractor's methods involve temporary works to support excavations suitable for person entry. Under such circumstances the contractor will be required to demonstrate that temporary works are suitable and have been properly designed and that suitable precautions and permits are in place to allow entry.

Under most circumstances, soil samples will be obtained by excavator operating from the surface. It is envisaged that the samples will be representative of the conditions of the soils at the limits of excavations after removal of hydrocarbon impacted material under the provisions in the main text of this document.

Measures to minimise cross contamination of soils destined for analyses are enacted in accordance with RSK's technical procedures, but as a minimum include cleaning of the engineer's sampling tools between sampling events. Samples obtained from the excavator bucket are obtained from material within that excavated (i.e., is not obtained from the outside of the material, such that it should not (as far as is reasonably practicable) include material which may have contacted the bucket itself.

Sampling frequency for different purposes is based on that set out in table 1. It should be noted that sampling will be targeted such that the most apparently impacted soils will be tested, and that there may be limitations on sampling due to safety, engineering constraints, water ingress and access. The sampling frequency set out below is guidance as to the typical minimum quantity of samples, but site specific circumstances will dictate the actual numbers of samples obtained at a specific site.

Table 1

Task/Location	Nominal frequency of sampling at the limits of excavations
General Excavation	One per 25 m^2 of excavation wall and base area (1 per face and 1 per base minimum)
Above ground Storage Tank Bunded Area	Two per tank & two per bund, or one per 25 m^2, whichever is greater
Underground Storage Tank Pit Floor	Two per tank, or one per 25 m^2, whichever is greater
Underground Storage Tank Pit Walls	One per pit wall, or one per 25 m^2, whichever is greater
Dispenser/Pump Area	One per dispenser/pump island (for natural soil; two where there is fill and natural soil)
Underground Fuel Pipeline	One per 7 metres of pipeline
Aboveground Fuel Pipeline	One per 15 metres of line
Waste Oil Underground Storage Tank	Two per tank, or one per 25 m^2, whichever is greater
Used Battery Storage Area	One per 25 m^2
Waste Disposal Area	One per 25 m^2
Interceptor and In-ground Hoist Pit	One per pit wall and one per pit floor, or one per 25 m^2, whichever is greater