Contaminated Land
Support

The Development of Land Affected by Contamination

Reports to support planning applications | May 2012

CYNGOR
Sir y Fflint
Flintshire
COUNTY COUNCIL

The Development of Land Affected by Contamination

Reports to support planning applications

Introduction

In developing a site, it is the responsibility of the developer to demonstrate that contamination present at the site may reasonably be addressed and that once developed, the site is suitable for the use proposed and is incapable of being formally determined as statutorily Contaminated Land in accordance with the provisions of Part IIA the Environmental Protection Act 1990.

Where there is a possibility that the site you intend to develop is affected by contamination, usually as a result of something that has taken place on or next to the site in the past, you may be required to have the site investigated to determine the nature and extent of and the degree of risk associated with land contamination.

This is particularly important where the proposed development would introduce something or someone that would be sensitive to or whose health could be adversely affected by the presence of contamination.

Getting it right first time

To avoid disappointment, delays and requests for further information, it is useful to be aware of the scale of the works, the cost of the works, how long the work is likely to take, health and safety precautions for those working on the development and the methods by which you will be required to show how that remediation has been achieved.

It is important to bear in mind that failure to provide sufficient information in a timely manner during the planning process may result in, at least, a significant delay and increased expense for the developer or at worst, a refusal of planning permission.

This guidance document has been prepared to provide you and your representatives with an explanation of the information that the Council requires when considering applications for planning permission and the discharge of planning conditions.

It also provides a summary of the information that you are likely to be asked to provide, checklists and the answers to some frequently asked questions.

Why is land contamination important?

The Council's development control and planning function already plays a key role in many aspects of pollution prevention and control. Land contamination is a material planning consideration and the Public Protection Service is consulted by the Planning Department over applications for planning permission.

Many applications are received for sites that may be affected by land contamination and the presence of contamination in the ground can present not only risks to health, structures and the environment but can also adversely affect or restrict the use of the land. The development of the land offers an opportunity to investigate and address those risks and to restore the beneficial use of the land.

Land contamination is a material planning consideration and so it must be taken into account by the Council when assessing an application for planning permission and when deciding whether or not to grant planning permission.

Developing a site may introduce changes to a site that could result in land being considered Contaminated Land, where that land would not be considered Contaminated Land if the development did not take place.

Once the development is complete or is occupied, unacceptable risks associated with land contamination should have been removed or reduced to an acceptable level and the land should not be capable of being determined as Contaminated Land in accordance with Part IIA of the Environmental Protection Act 1990.

The consultation process

Applications for planning permission are sent by the Planning Department to Public Protection for comments.

To provide those comments the Contaminated Land Officer will take into account information from a variety of sources to decide whether land contaminations assessments should be carried out or not. Sources of information that may be taken into account include;

- Historical maps and historical land uses
- Historical and current records
- Previous site investigations
- The current land use
- The previous land use
- The proposed land use
- The sensitivity of the development proposed
- The likelihood that the site could be affected by contamination

It is important to remember that legislation, guidance, best practice and industry standards are updated and changed frequently. This means that investigations and reports from some time ago may be out of date and may need to be reviewed to make sure that they are up to date and consistent with current standards. If the report is very old, the information in it may be so out of date that it can't be used and the investigation may need to be started again from scratch.

The assessment of land contamination process takes into account the proposed development, potential contamination, features and condition of each site. These things can vary across one site and so from site to site and the information gained from one site investigation is not transferable to another.

So far as land contamination is concerned, any information that the Council may need to take into account when deciding whether or not to grant planning permission is given to the Planning Officer who will in turn, provide advice to the applicant or their representative.

Where it is suspected that land may be affected by contamination, the nature of the contamination and the sensitivity of the proposed development must be taken into account and each site assessed on its own merits.

Where there is a possibility that the site is affected by contamination, usually as a result of something that has taken place on or next to the site in the past, Public Protection may ask the Planning Department to impose a condition requiring the site to be investigated on the planning permission if it is granted.

This is particularly important where the proposed development would introduce something or someone that would be sensitive to or whose health could be adversely affected by the presence of contamination.

In some cases, where it is suspected that a site may be grossly affected by contamination or that remediation (something that is done to remove or reduce the contamination to an acceptable level) of the contamination may not reasonably be achieved, the Council may require that the site is investigated and remediation proposals submitted in support of an application for planning permission. It is in these cases that it would not be considered appropriate to put a condition requiring this on a planning permission. Before it grants planning permission, the Council must first be satisfied that the site is suitable for the development proposed, that all potential risks have been identified and that those risks can be addressed. For this reason, information in respect of land contamination is required in support of the application in these cases.

The Council needs to be sure that where contamination is present, it can reasonably be remediated. This is especially important where gas protection measures are necessary as this may involve significant alterations to the foundations and floor of an existing building. The Council needs to be sure that if necessary, the required level of gas protection measures can be correctly installed in an existing structure.

Pre-application and early discussions

It is recommended that as much information as possible is provided in support of an application for planning permission.

It is always useful to discuss your proposals and any requirements for land contamination assessments at the earliest opportunity, sometimes even before the planning application is made. This is particularly useful if you are already aware that the site that you propose to develop may be or is affected by land contamination or that land contamination assessments will be required.

Involving the Contaminated Land Officer as early as possible and continuing discussions as the application progresses creates an excellent opportunity to provide the Council with as much good quality information as possible in support of the application. It also provides an opportunity for the Council to provide you with as much information and advice as possible and can minimize delays and other problems at later stages. It can reduce the number of conditions imposed on the planning permission and can reduce the time it takes the officers dealing with the application to provide you with a response.

Enquiries should be made to the Planning Officer first of all and any reports should be sent directly to them to be passed on to the Contaminated Land Officer.

It is not recommended that you enter into discussions or negotiations with other Council departments or with other organisations without discussing this with the Planning Officer first.

Submitting information to the Council

So far as land contamination is concerned, information submitted to the Council in connection with development proposals, an application for planning permission or in connection with a planning permission should be sent to the Planning Officer.

It is important to understand from the outset that when information is submitted to the Council, particularly when reports are submitted in a regulatory context such as this, the Council will expect that the information has been complied in consideration of best practice and current guidance and to an appropriate standard.

Two copies of each report should be submitted. The Planning Officer will retain one copy for their records and will send the other copy directly to the Contaminated Land Officer.

The information can be submitted electronically or on paper but it important to make sure that complete reports, including any appendices, maps and pictures are sent. Some of the information, such as maps, charts and photographs, which may be used in land contamination assessments, may be protected by copyright laws and it is your responsibility to ensure that the information provided is compliant with those laws.

Although the public may view the information that you provide, plans, drawings, reports and other material submitted to the Council are protected by the Copyright Acts (Section 47, 1988 Act). You may only use material which is downloaded from the Councils website for consultation purposes; to compare current planning applications with previous schemes and to check whether developments have been completed in accordance with approved plans.

You must not distribute, alter or use any documents for any commercial or other purpose.

Further copies must not be made without the prior permission of the copyright owner.

The Contaminated Land Officer will consider the information that has been submitted and will provide observations, comments and advice as appropriate to the Planning Officer. The Planning Officer will in turn, pass this on to you or your representative.

Choosing a competent consultant

The Council is not able to recommend one company over another. Land contamination assessments are specialised pieces of work and to carry them out requires competence, experience and careful professional judgement. It is recommended that an environmental consultancy is appointed to carry them out. There are lots of consultancies that may be able to offer the services required and a lot of companies are listed in directories such as the ENDS Directory.

The Council does not provide a sampling service, does not design or carry out site investigations and does not interpret results from site investigations carried out for others. This includes those applying for or who have been given planning permission, developers and their agents.

It is not recommended that you carry out land contamination assessments yourself as this may expose you and others to health risks and may cause damage to the environment.

There are a number of things to take into account when designing and carrying out a site investigation. Some of these things are listed below as examples;

- Requirements for Personal Protective Equipment (PPE)
- Insurances and Indemnities
- What to look for and why
- Where to take the samples and why
- The type of samples to take and why
- Suitable sample containers
- How to take the samples correctly
- Appropriate storage and handling of samples
- How many samples to take
- How to label the samples
- How to avoid mixing samples up
- Whether or not to dig trial pits, trenches or drill boreholes and why
- How deep they should be and why
- How far apart they should be and why
- How many samples to take from each and why
- How much sample to collect and why
- Where to take them to be tested
- Laboratory accreditations
- Which testing methods to ask the laboratory to use and why
- What to ask them to test for and why
- Which tests to ask for and why
- What the results mean
- Appropriate computer software
- How often to take the samples
- How often to carry out monitoring
- Permits, consents and licences to do the work
- Toxicological information
- Appropriate investigation and remediation technologies

It is difficult to be certain that someone will do a good job but if you make a few checks and make yourself aware of and understand what you want them to and the reasons why, you can ask them some informed questions which may help you decide who to appoint.

Some examples of the questions that you might like to ask are given below;

- Ask for a few quotations and ask for the quotation to be broken down into parts (sampling, site supervision, reporting, laboratory analysis, phone calls, meetings, details and credentials of sub-contractors etc). This will help you to make sure that you are getting value for money and will make comparing quotations easier.

- Discuss the site and proposed development, any information to support a planning application or the requirements of the conditions on the Planning Permission with the companies providing the quotations. Explain what you want them to do and why.

- Ask for references. Who have they worked for? Have they done much work of this type before? Follow up the references, speak to the people that they have done work for and ask if they were happy with the work.

- Ask which member of staff will be doing the work. Ask if they have experience of this type of work. Make sure that the quotation includes the supervision of the works on site by a suitable member of staff.

Supervision by a suitable person at all times during the investigation is very important as that person can make sure that the scope of the investigation, standards, best practice and procedures are adhered to and that samples are collected, recorded stored and handled correctly. This means that you receive a better service and value for money and recover the best information possible from your investigation.

- Do they follow quality assurance procedures?
- How much of the work will be done by them and how much will be sub-contracted to someone else?
- Do they have professional indemnity insurance and public liability insurance?
- Have they been prosecuted for environment or pollution related offences?
- Is the company solvent?
- Do they have the expertise and experience to carry out each stage of the investigation from desk study to verification if required?

It is important to be mindful that failure to provide sufficient information in a timely manner during the planning process may result in, at least, a significant delay and increased expense for the developer or at worst a refusal of planning permission.

Disappointment, delays, requests for further information and excess expense are more likely to be avoided if the services of suitably qualified and experienced experts are used throughout.

The land contamination assessment process

Land contamination investigations and the assessment of risk are carried out in phases. There are usually 4 phases.

1. Desk Study (preliminary risk assessment)
2. Intrusive Investigation (detailed risk assessment)
3. Remediation
4. Verification

The outcome of the assessments carried out at each stage will determine if it necessary to progress to the next stage. For example, if the Desk Study finds that there are likely to be unacceptable levels

of contamination present then it will be necessary to carry out an intrusive investigation. If the intrusive investigation finds that there are unacceptable risks as a result of the presence of the contamination then it will be necessary to carry out remediation.

There is plenty of guidance, best practice and advisory documentation that is available to the public and as the Council will expect that the information provided to it has been prepared in consideration of such documentation; it is recommended that applicants and their representatives refer to those documents for more detailed advice and guidance.

A list of examples of documents that may be useful is provided at the end of this document.

Managing risks from land contamination

To make a judgement and decide whether or not the risk posed by the presence of land contamination at a site is acceptable, a number of factors are taken into account.

The purpose of each phase of the land contamination assessment process is to provide the information required to inform this decision and to provide an explanation of how the decision has been reached.

It is important to understand what the risks are, if any, that could be caused by contamination and whether or not those risks are acceptable.

It is not always either reasonable or practicable to clean up contamination completely but by the time that the assessment process is complete, risks should have been identified, anticipated and assessed and one or more solutions to remove or reduce unacceptable risks to acceptable levels should have been identified.

In the context of land contamination, there are 3 elements to any risk but the risk may only be considered to be present if each of the 3 elements is present.

The 3 elements are

- Contaminant (or source of contamination) – a substance that is in, on or under the land that has the potential to cause harm or to cause pollution of controlled waters (for example rivers, streams, lakes, groundwater)

- Pathway – a route or way in which a receptor could be exposed to, or affected by a contaminant.

- Receptor – Something or someone that could be affected by a contaminant.

Where all 3 elements are present, this is known as a pollutant linkage. There may be more than one pollutant linkage present at a site and some pollutant linkages may be connected. For example, one contaminant may affect more than one receptor along more than one pathway.

Developing a site may introduce pathways and receptors to a site where those elements would not have been present if the development did not take place.

In developing a site, it is the responsibility of the developer to demonstrate that contamination present at the site may reasonably be addressed and that once developed, the site is suitable for the use proposed.

Phase 1 – The desk study (preliminary risk assessment)

The purpose of this phase of the investigation is to use a variety of sources of information to identify potential contaminants, pathways and receptors so that the intrusive investigation can be designed to investigate the potential pollutant linkages.

Sources of information include for example;

- Historical maps
- Geological maps and memoirs
- Hydrogeological maps
- Coal authority records
- Local Authority records
- Environment Agency records
- Records of previous land uses
- Site plans
- Assessment of previous land uses
- Assessment of current land use
- Assessment of proposed land use
- Review of any previous investigations

This phase of the investigation also provides an opportunity to identify any constraints or restrictions that may affect subsequent phases for example,

- Access points
- Location of drains
- Location of water pipes
- Location of gas mains
- Nature and extent of concrete hardstandings
- Old foundations

Once the potential contaminants, pathways, receptors and potential pollutant linkages have been identified, these are used to put together a Conceptual Site Model.

The Conceptual Site Model is a compilation of all the potential pollutant linkages. It is a very important part of the land contamination assessment process and although it can be expressed as a table, a diagram or both, it is important that it is presented in a format that can be easily followed through and back through each phase.

It is used to understand and identify potential pollutant linkages and interactions between them, to design the intrusive investigation, to inform the detailed risk assessment and to design and verify remedial works.

Phase 2 – The intrusive investigation (detailed risk assessment)

It is expected that an intrusive investigation will be carried out when Phase 1 of the land contamination assessment has found that there are potential pollutant linkages and potentially unacceptable risks present.

Phase 1 of the assessment must be sufficient to show that the potential risks have been thoroughly understood and this means that a high level of confidence in the preliminary risk assessment is required to demonstrate that any other outcome is acceptable.

The investigation itself should be designed to look into the potential pollutant linkages and the following information, for example, should be included in the report that is submitted to the Council.

- Desk Study
- Methodology (e.g. explanation of what was done and why)
- Plans showing locations of exploratory points (e.g. boreholes, wells and trial pits)
- Plan showing locations of exploratory points and proposed development
- Explanation of what was found and where
- Discussion of results
- Revised Conceptual Site Model
- Detailed risk assessment (based on Conceptual Site Model)
- Justification of any risk assessment method or tool used
- Copies of regulatory permits, consents and licences
- Copies of correspondence from other organisations such as the Environment Agency and the Countryside Council for Wales
- Recommendations for further investigation

Reports of the findings of Phase 1 and Phase 2 reports can be submitted together but Phase 2 reports should not be submitted before or without a Phase 1 report.

If a Phase 2 report is submitted before or without a Phase 1 report, the Contaminated Land Officer is likely to reject it.

To avoid delays and to avoid having your report rejected, it is important to ensure that each phase of the land contamination assessment is carried out with regard to up to date UK risk assessment tools, best practice and guidance documents.

Sometimes, the detailed risk assessment will conclude that although some contamination is present, the levels of contamination do not pose a risk to receptors and are acceptable. In these cases, remediation is unlikely to be required.

Where the levels of contamination are found to be unacceptable then remediation will be necessary and the Council will expect a Remediation Strategy to be submitted.

General references to remediation made in Phase II reports will not be accepted as a substitute for a remediation strategy.

Phase 3 – Remediation

The purpose of remediation is to break the pollutant linkages associated with the unacceptable risks found at Phase II will be broken to remove those risks or reduce them to an acceptable level.

A Remediation Strategy report to provide a detailed explanation of which pollutant linkages will be broken and how this will be done will be required. The report should include, for example, the following information;

- Appraisal of remediation options
- Recommendations for remediation
- Explanation of why chosen method was selected
- Explanation of any permits, consents or licences required
- Explanation of how remediation will be verified
- Approximate timescales
- Dust, odour and noise controls
- Control of surface water run-off
- Waste disposal

It is important to make sure that detailed records of the activities carried out during the remediation works are kept as it is this information that will be relied upon to verify that the work has been carried out.

Phase 4 – Verification

When the remediation works have been completed it will be necessary to provide a Verification Report to show that the remediation work has actually been carried out and has been successful.

The report should include, for example, the following information,

- Remediation Strategy
- Results of laboratory tests
- Monitoring results
- Plans showing areas that were treated
- Details of who carried out the work
- Photographs
- Waste Transfer Notes
- Conceptual Site Model
- Copies of permits, consents and licences
- Explanation of how work was carried out
- Explanation of how remediation has been successful

It is important that the information provided to show that remediation was carried out is provided for each area where remediation was required. Where remediation was required at individual areas of a development then it is particularly important to make sure that information is provided for each of those individual areas.

For example, if 10 houses were built and gas protection measures were required to be installed in each house, then information to show that the gas protection measures were installed in each house is required.

If 10 houses were built and remediation was required in 5 of the back gardens, then information to show that each of the 5 back gardens was remediated is required.

It is not sufficient to provide information that simply provides general information about the remediation work that was carried out.

For example, if 10 houses were built and gas protection measures were required to be installed in each house, it is not sufficient to provide information to claim that gas protection measures were installed in each house but that shows evidence of gas protection measures in only 3 of the houses.

If general statements are made in a Verification Report without evidence to show that remediation has been carried out in each individual area, building or plot, the Contaminated Land Officer can have no confidence that the statements are true and is likely to reject the report.

As a result, the condition imposed on the planning permission may not be discharged and you may find that selling the finished development or securing a mortgage on it is very difficult or at worst, impossible.

Checklists

The following checklists may assist you when preparing and submitting reports to the Council. The lists suggest the information that should be provided but they are not intended to be exhaustive.

Because the site investigation process takes into account the proposed development, potential contamination, features and condition of each site and these factors vary across one site and from site to site, the information required may also vary depending on the circumstances.

It is important to bear in mind that failure to provide sufficient information in a timely manner during the planning process may result in, at least, a significant delay and increased expense for the developer or at worst, a refusal of planning permission.

If you are submitting reports in connection with an application for planning permission or because a condition requiring you to do so has been imposed on your planning permission, please provide 2 copies. The Planning Officer will retain one copy for their records and will send the other copy directly to the Contaminated Land Officer.

Phase 1 – Desk study (preliminary risk assessment)

Review of variety of information to identify potential sources, pathways and receptors for Conceptual Site Model. Include copies of information referred to.

- Objectives of report
- Site address, description and National Grid Reference
- Plan of site showing site boundary
- Historical maps
- Geological maps and memoirs
- Hydrogeological maps
- Water abstraction points
- Private Water Supplies
- Coal Authority records
- Local Authority records
- Environment Agency records
- Environmental Designations such as SSSI, SAC, RAMSAR
- Copies of consultations with other organisations such as Environment Agency, Countryside Council for Wales, Clwyd Powys Archaeological Trust
- Records of previous land uses
- Review of surrounding land uses and potential sources of contamination
- Aerial photographs
- County Record Office searches
- Pollution incidents
- Assessment of previous land uses
- Assessment of current land use
- Assessment of proposed land use
- Review of previous investigations and remediation schemes

Conceptual Site Model

- Sources/Contaminants
- Pathways
- Receptors
- Explanation of individual pollutant linkages
- Diagram and table showing individual pollutant linkages

Explanation of constraints or restrictions that may affect subsequent phases of the investigation. For example,

- Access points
- Location of drains, septic tanks, cesspits, interceptors and sewers
- Location of water pipes
- Location of gas mains
- Nature and extent of concrete hardstandings
- Old foundations
- Fuel tanks
- Archaeological features
- Public Rights of Way
- Mine shafts, entries and adits

Proposals for Phase 2 – intrusive site investigation

Detailed scope (including justification) of intrusive investigation

Phase 2 – intrusive investigation (detailed risk assessment)

Review of any existing desk-based, intrusive investigations or remedial works for the site

Site Investigation Methodology
- Methods of investigation
- Plan showing exploratory locations
- Justification of exploratory locations
- Sampling and analytical strategies
- Copies of correspondence with other organisations

Results and findings of investigation
- Ground conditions including soil, groundwater and made ground
- Discussion (including visual, olfactory, analytical)

Conceptual Site Model

Risk Assessment
- justification of any QRA model, tool or method used

Recommendations for remediation – justification of such recommendations should relate to proposed site use risk assessment findings and technical and financial appraisals

Recommendations for further investigation.

The chosen laboratory for sampling analysis should either possess the Environment Agency's Monitoring Certification Scheme (MCERTS) accreditation for all parameters or should be able to sub-contract any parameters that are not accredited to another laboratory that does have the appropriate accreditation.

Phase 3 – Remediation

Explanation of objectives of the remediation works

Detailed outline of the works to be carried out:

- Description of ground conditions (soil and groundwater)
- Details of contamination to be remediated
- Plan of areas to be remediated
- Remediation methodology including
- Conceptual Site Model
- Site plans/drawings
- Explanation of phasing of works
- Approximate timescales
- Consents, permits, agreements and licences
- Copies of correspondence with other organisations
- Appraisal of remediation options
- Recommendations for remediation
- Explanation of why chosen method was selected
- Explanation of any permits, consents or licences required
- Explanation of how remediation will be verified
- Approximate timescales
- Dust, odour and noise controls
- Control of surface water run-off
- Waste disposal

Site management procedures to protect site neighbours, environment and amenity during works, should include where appropriate:

- Health and safety procedures
- Dust, noise and odour controls
- Control of surface run-off.

Details of how any necessary variations from the approved remediation statement arising during the course of works will be dealt with.

Details of how the works will be validated to ensure the remediation objectives have been met; should include details on:

- Sampling strategy
- Chemical analysis
- Proposed standards (i.e. contamination concentrations).
- Monitoring

Phase 4 – Verification

Remediation Strategy

- Monitoring results
- Results of laboratory tests
- Plans showing areas that were treated
- Details of who carried out the work
- Photographs
- Waste Transfer Notes
- Conceptual Site Model
- Copies of permits, consents and licences
- Explanation of how work was carried out
- Explanation of how remediation has been successful and how objectives have been met
- Evidence to show of how remediation has been successful and how objectives have been met

References and guidance

- British Standards Institution (2011) Investigation of Potentially Contaminated Sites, Code of Practice, BS: 10175:2011

- British Standards Institution (2010) Amendment 2: Code of Practice for Site Investigation, BS5930:1999+

- British Standards Institution (2007) Specification for Topsoil and Requirements for Use, Code of Practice, BS: 3882:2007

- British Standards Institution (2002) Soil Quality, Sampling. Guidance on sampling techniques, Code of Practice BS: 10381:2002

- CIRIA Report C665 (2007) Assessing Risks Posed by Hazardous Ground Gases to Buildings

- CL:AIRE & Chartered Institute for Environmental Health (2008) Guidance on Comparing Soil Contamination Data with a Critical Concentration

- CL:AIRE (2011) Definition of Waste: Development Industry Code of Practice.

- Department of the Environment (1995) Industry Profiles

- Environment Agency (2010) Guiding Principles for Land Contamination

- Environment Agency (2004) Model Procedures for the Management of Land Contamination (CLR 11)

- Environment Agency (2006) Remedial Targets Methodology, Hydrogeological Risk Assessment for Land Contamination

- Environment Agency (2010) Petroleum Hydrocarbons in Groundwater: Supplementary Guidance for Hydrogeological Risk Assessment

- Environment Agency (2002) Technical Advice to Third Parties on Pollution of Controlled Waters for Part IIA EPA 1990

- Environment Agency (2005) Science Report P5-080/TR3, The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons for Soil

- Environment Agency (2003) MCERTS Performance Standards for Laboratories Undertaking Chemical Testing of Soil

- Environment Agency (2009) Science Report SC050021/SR2, Human Health Toxicological Assessment of Contaminants in Soil, Background to the CLEA Model

- Environment Agency (2009) Science Report SC050021/SR3, Updated

- Environment Agency (2009) CLEA Software Handbook Version 1.04

- Environment Agency, National House Building Council and Chartered Institute for Environmental Health (2008) Guidance for the Safe Development of Housing on Land Affected by Contamination, R&D Publication 66:2008

- Health and Safety Executive (1991) Protection of Workers and the General Public during the Development of Contaminated Land

- Raybould JG, Rowan DL & Barry DL, 1995, CIRIA Report C150, Methane Investigation Strategies

- Welsh Assembly Government (2006) Statutory Guidance on Contaminated Land

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