Conditions of Contract

Services

Document Version: October 2019

Hertfordshire Chalk Groundwater Model Update and GW Emergence

Contract Reference: [redacted]

1. DEFINITIONS

1.1. In the Contract, unless the context otherwise requires the following words and expressions shall have the following meanings assigned to them.

1.1.1. Agency
The Environment Agency, its successors and assigns.

1.1.2. Agency Property
All property issued or made available for use by the Agency to the Contractor in connection with the Contract.

1.1.3. The Appendix
The Appendix to these Conditions.

1.1.4. The Contract
These Conditions including the Appendix, any Special Conditions, Specification, Pricing Schedule, Contractor's tender, acceptance letter and any relevant documents agreeing modifications exchanged before the Contract is awarded, and any subsequent amendments or variations agreed in writing.

1.1.5. The Contractor
The person, firm company or body who undertakes to supply the Services to the Agency as defined in the Contract.

1.1.6. Contract Period
The time period stated in the Appendix or otherwise provided in the Contract, for the performance of the Services.

1.1.7. Contractor Personnel
means all directors, officers, employees, agents, consultants and contractors of the Contractor and/or of any sub-contractor engaged in the performance of its obligations under this Contract

1.1.8. Contract Price
The price exclusive of VAT set out in the Contract for which the Contractor has agreed to supply the services.

1.1.9. Contract Supervisor
Any duly authorised representative of the Agency notified in writing to the Contractor for all purposes connected with the Contract. Any Notice or other written instruction given by or made to the Contract Supervisor, shall be taken as given by or made to the Agency.

1.1.10.Contracting Authority
means any contracting authorities (other than the Environment Agency) as defined in regulation 2 of the Public Contract Regulations 2015 (SI 2015/102) (as amended).

1.1.11.Data Protection Legislation
means: (i) the General Data Protection Regulation (Regulation (EU) 2016/679) or GDPR, the Law Enforcement Directive (Directive (EU) 2016/680) ("LED") and any applicable national implementing Laws as amended from time to time (ii) the Data Protection Act 1998 ("DPA 1998") and/or the Data Protection Act 2018 ("DPA 2018") to the extent that it

relates to processing of personal data and privacy; (iii) all applicable Law about the processing of personal data and privacy

1.1.12.Data Protection Schedule
The Schedule attached to this Contract describing how the Parties will comply with the Data Protection Legislation.

1.1.13.Intellectual Property Rights
All Intellectual Property Rights including without limitation, patents, patent applications, design rights, registered designs, utility models, trade and service marks and applications for same, copyright know-how, rights in semi-conductor chip topography, and in each case whether protectable at law or not, and if protectable, whether an application has been made for such protection or not, and all similar industrial, commercial, monopoly or other intellectual property rights whether present or future, vested or contingent wherever protected.

1.1.14.Law
means any law, subordinate legislation within the meaning of Section 21(1) of the Interpretation Act 1978, bye-law, enforceable right within the meaning of Section 2 of the European Communities Act 1972, regulation, order, regulatory policy, mandatory guidance or code of practice, judgment of a relevant court of law, or directives or requirements with which the Contractor is bound to comply

1.1.15.Notice
Any written instruction or notice given to the Contractor by the Contract Supervisor, delivered by:

i. fax, or hand delivery to the Contractor’s registered office or other address notified for the purposes of the Contract and deemed to have been served at the date and time of delivery;

First class post to the Contractor’s registered office. Such Notices are deemed to have been served 48 hours after posting.

1.1.16.Results
All things produced in performing the Services including maps, plans, photographs, drawings, tapes, statistical data, experimental results, field data, analysis of results, published and unpublished results and reports, inventions, computer programmes and user documentation.

1.1.17.The Resulting Rights
All Intellectual Property Rights in the Results that are originated, conceived, written or made by the Contractor, whether alone or with others in the performance of the Services or otherwise resulting from the Contract.

1.1.18.Permission
Express permission given in writing before the act being permitted.

1.1.19.Services
All Services detailed in the Specification including any additions or substitutions as may be requested by the Contract Supervisor.

1.1.20.Regulations
Means the Public Contract Regulations 2015 (SI 2015/102) as amended.

1.2. Except as set out above and in the Data Protection Schedule, the Contract shall be interpreted in accordance with the Interpretation Act 1988.

1.3. All headings in these Conditions are for ease of reference only, and shall not affect the construction of the Contract.

1.4. Any reference in these Conditions to a statutory provision will include all subsequent modifications.

1.5. All undefined words and expressions are to be given their normal English meaning within the context of this Contract. Any dispute as to the interpretation of such undefined words and expressions shall be settled by reference to the definition in the Shorter Oxford English Dictionary.

2. PRECEDENCE

To the extent that the following documents form the Contract, in the case of conflict of content, they shall have the following order of precedence:

- Conditions of Contract including Appendix, Data Protection Schedule and any Special Conditions;
- Specification;
- Pricing Schedule;
- Drawings, maps or other diagrams.

3. CONTRACT SUPERVISOR

The Contractor shall strictly comply with any instruction given by the Contract Supervisor concerning or about the Contract provided such instructions are reasonable and consistent with the nature, scope and value of the Contract. All such instructions shall be in writing. The Contractor is not obliged to comply with any verbal instruction from the Contract Supervisor that is not confirmed in writing within 7 working days.

4. THE SERVICES

4.1. The Contractor shall provide all staff, equipment, materials and any other requirements necessary for the performance of the Contract using reasonable skill, care and diligence, and to the reasonable satisfaction of the Contract Supervisor.

4.2. The Contractor shall only employ in the execution and superintendence of the Contract persons who are suitable and appropriately skilled and experienced. The Contract Supervisor shall be at liberty to object to and require the Contractor to remove any person employed in or about the Contract who is unsuitable, misconducts himself, is incompetent or negligent in the performance of his duties or persists in conduct which could endanger the health or safety of others. Such persons shall not be employed again on the Contract without the Permission of the Contract Supervisor.

5. ASSIGNMENT

5.1. The Contractor shall not assign, transfer or sub-contract the Contract, or any part of it, without the Permission of the Contract Supervisor.

5.2. Any assignment, transfer or sub-contract entered into, shall not relieve the Contractor of any of his obligations or duties under the Contract.

5.3. Nothing in this Contract confers or purports to confer on any third party any benefit or any right to enforce any term of the Contract.

6. CONTRACT PERIOD

The Contractor shall perform the Services within the time stated in the Appendix, subject to any changes arising from Condition 10 (Variations,) and/or Condition 11 (Extensions of time.).

The Agency will enter into the Contract on the basis that it requires the Services for the Initial Contract Period. However, in entering into the Contract, both Parties acknowledge that circumstances may prevent the Authority from fulfilling the funding requirements of the Contract for the Initial Contract Period. In these circumstances, the Parties undertake to discuss the future scope of the Contract before the end February 2022.

7. PROPERTY

7.1. All property issued by the Agency to the Contractor in connection with the Contract shall remain the property of the Agency, and shall be used in the execution of the Contract, and for no other purpose whatsoever without the prior approval of the Contract Supervisor.

7.2. The Contractor shall keep all Agency Property in safe custody and good condition, set aside and clearly marked as the property of the Agency.

7.3. On expiry or earlier termination of the Contract the Contractor shall, if so required, either surrender such property to the Agency or otherwise dispose of it as instructed by the Contract Supervisor.

8. MATERIALS

8.1. The Contractor shall be responsible for establishing his own sources of supply for goods and materials and will be responsible for ensuring the reasonable and proper conduct by his suppliers and staff whilst on the Agency’s premises.

8.2. The Contractor shall not place, or cause to be placed, any orders with suppliers or otherwise incur liabilities in the name of the Agency or any representative of the Agency.

9. SECURITY

9.1. The Contractor shall be responsible for the security of all goods and equipment belonging to the Agency and used by the Contractor in the provision of the Services, belonging to the Contractor, or Contractors staff, or sub-contractors whilst on Agency premises.

9.2. This Condition shall not prejudice the Agency's rights under Condition 15.

10. VARIATIONS

10.1. The Contract Supervisor may vary the Contract by adding to, deleting or otherwise modifying the Services to be supplied, by written order to the Contractor provided such variations are reasonable and consistent with the nature, scope and value of the Contract.

10.2. The value of any such variation, other than any variation arising out of Condition 10.3, shall be determined by reference to the rates contained in the Pricing Schedule. Where the Services so ordered are not covered in the Pricing Schedule, they shall be valued at a fair and reasonable rate agreed between the Contract Supervisor and the Contractor.

10.3. Where a variation is the result of some default or breach of the Contract by the Contractor or some other cause for which he is solely responsible, any additional cost attributable to the variation shall be borne by the Contractor.

10.4. The Contractor may also propose a variation to the Services but no such variation shall take effect unless agreed and confirmed in writing by the Contract Supervisor.

10.5. No variation shall have the effect of invalidating the Contract, or placing the Contract at large, if that variation is reasonably consistent with the nature, scope and value of the Contract. The Agency may vary the Contract to comply with a change in English Law. Such a change will be effected by the Contract Supervisor notifying the Contractor in writing.

10.6. The Agency may assign, novate or otherwise dispose of its rights and obligations under the Contract or any part thereof to:

10.6.1. any Contracting Authority; or

10.6.2. any other body established by the Crown or under statute in order substantially to perform any of the functions that had previously been performed by the Agency; or

10.6.3. any private sector body which substantially performs the functions of the Agency, provided that any such assignment, novation or other disposal shall not increase the burden of the Contractor's obligations under the Contract.

10.7. Any change in the legal status of the Agency such that it ceases to be a Contracting Authority shall not affect the validity of the Contract. In such circumstances the Contract shall bind and inure to the benefit of any successor body to the Agency.

11. EXTENSIONS OF TIME

11.1. Should the performance of the Contract be directly delayed by any cause beyond the reasonable control of the Contractor, and provided that the Contractor shall first have given the Contract Supervisor written notice within five working days after becoming aware that such delay was likely to occur, then the Contract Supervisor, if satisfied that this Condition applies:

11.1.1. in the case of any delay of which the Agency is not the cause, may grant the Contractor such extension of time, as in his opinion is reasonable, having regard without limitation, to any other delays or extensions of time that may have occurred or been granted under the Contract. The Contract Price shall not increase as a result of such an extension of time.

11.1.2. in the case of any delay of which the Agency is the cause, shall grant the Contractor a reasonable extension of time to take account of the delay.

11.2. No extension of time shall be granted where in the opinion of the Agency the Contractor has failed to use reasonable endeavours to avoid or reduce the cause and/or effects of the delay.

11.3. Any extension of time granted under this Condition shall not affect the Agency's rights to terminate or determine the Contract under Conditions 13 and 14.

12. DEFAULT

12.1. The Contractor shall be in default if he:

12.1.1. fails to perform the Contract with due skill, care, diligence and timeliness;

12.1.2. refuses or neglects to comply with any reasonable written instruction given by the Contract Supervisor;

12.1.3. is in breach of the Contract.

12.2. Where in the opinion of the Contract Supervisor, the Contractor is in default, the Contract Supervisor may serve a Notice giving at least five working days in which to remedy the default.

12.3. If the Contractor fails to comply with such a Notice the Contract Supervisor may, without prejudice to any other rights or remedies under the Contract, take over for as such a period as is necessary the performance of the relevant part of the Contract and make other arrangements for its completion. Any extra costs arising from this action, will be paid by the Contractor or deducted from any monies owing to him.

13. TERMINATION

13.1. The Agency may immediately, without prejudice to any other rights and remedies under the Contract, terminate all or any part of the Contract by Notice in writing to the Contractor, Receiver, Liquidator or to any other person in whom the Contract may become vested, if the Contractor:

13.1.1. fails in the opinion of the Contract Supervisor to comply with (or take reasonable steps to comply with) a Notice under Condition 12.2.

13.1.2. becomes bankrupt or insolvent, or has a receiving order made against him, or makes and arrangement with his creditors or (being a corporation) commences to be wound up, not being a voluntary winding up for the purpose of reconstruction or amalgamation, or has a receiver, administrator, or administrative receiver appointed by a Court.

'Termination under the Regulations'

13.2. The Agency may terminate the Contract on written Notice to the Contractor if:

13.2.1. the contract has been subject to a substantial modification which requires a new procurement procedure pursuant to regulation 72(9) of the Regulations;

13.2.2. the Contractor was, at the time the Contract was awarded, in one of the situations specified in regulation 57(1) of the Regulations, including as a result of the application of regulation 57(2), and should therefore have been excluded from the procurement procedure which resulted in its award of the Contract; or

13.2.3. The Contract should not have been awarded to the Contractor in view of a serious infringement of the obligations under the Treaties and the Regulations that has been declared by the Court of Justice of the European Union in a procedure under Article 258 of the TFEU.

14. DETERMINATION

14.1. Without prejudice to any other rights or remedies under the Contract, the Agency reserves the right to determine the Contract at any time by giving not less than one month’s Notice, (or such other time period as may be appropriate).

14.2. The Agency shall pay the Contractor such amounts as may be necessary to cover his reasonable costs and outstanding and unavoidable commitments necessarily and solely incurred in properly performing the Contract prior to determination.

14.3. The Agency will not pay for any costs or commitments that the Contractor is able to mitigate and shall only pay those costs that the Agency has validated to its satisfaction. The Agency's total liability under this Condition shall not in any circumstances exceed the Contract Price that would have been payable for the Services if the Contract had not been determined.

15. INDEMNITY

15.1. Without prejudice to the Agency's remedies for breach of Contract, the Contractor shall fully indemnify the Agency and its staff against any legally enforceable and reasonably mitigated liability, loss, costs, expenses, claims or proceedings in respect of:

15.1.1. death or injury to any person;

15.1.2. loss or damage to any property excluding indirect and consequential loss;

15.1.3. infringement of third party Intellectual Property Rights

which might arise as a direct consequence of the actions or negligence of the Contractor, his staff or agents in the execution of the Contract.

15.2. This Condition shall not apply where the damage, injury or death is a direct result of the actions, or negligence of the Agency or its staff.

16. LIMIT OF CONTRACTOR'S LIABILITY

16.1. The aggregate limit of the Contractor's liability for claims made by the Agency, other than for death or personal injury, whether by way of indemnity or by reason of breach of contract, or statutory duty, or by reason of any tort shall be:

16.1.1. the sum stated in the Appendix;

16.1.2. if no sum is stated, the Contract Price or five million pounds whichever is the greater.

17. INSURANCE

17.1. The Contractor shall insure and maintain insurance against liabilities under Condition 15 (Indemnity) in the manner and to the values listed in the Appendix to these Conditions. If no sum is stated, the value insured shall be £5M (five million pounds.)

17.2. If specifically required by the Agency, nominated insurances shall be in the joint names of the Contractor and the Agency.

17.3. The Contractor shall, upon request, produce to the Contract Supervisor documentary evidence that the insurances required are fully paid up and valid for the duration of the Contract.

18. PREVENTION OF FRAUD AND CORRUPTION

18.1. The Contractor shall not offer, give, or agree to give anything, to any person an inducement or reward for doing, refraining from doing, or for having done or refrained from doing, any act in relation to the obtaining or execution of the Contract or for showing or refraining from showing favour or disfavour to any person in relation to the Contract.

18.2. The Contractor shall take all reasonable steps, in accordance with good industry practice, to prevent fraud by the Contractor's staff and the Contractor (including its shareholders, members and directors) in connection with the Contract and shall notify the

Agency immediately if it has reason to suspect that any fraud has occurred or is occurring or is likely to occur.

18.3. If the Contractor or the Contractor's staff engages in conduct prohibited by this clause 18 or commits fraud in relation to the Contract or any other contract with the Crown (including the Agency) the Agency may:

18.3.1. terminate the Contract and recover from the Contractor the amount of any loss suffered by the Agency resulting from the termination, including the cost reasonably incurred by the Agency of making other arrangements for the supply of the Goods and any additional expenditure incurred by the Agency throughout the remainder of the Contract; or

18.3.2. recover in full from the Contractor any other loss sustained by the Agency in consequence of any breach of this clause.

18.4. The Contractor shall not, directly or indirectly through intermediaries commit any offence under the Bribery Act 2010 (as amended), in any of its dealings with the Agency.

19. MONITORING AND AUDIT

19.1. The Contract Supervisor may inspect and examine the Services being carried out on the Agency's premises, or elsewhere at any reasonable time. Where the Services are being performed on other than the Agency's premises, reasonable notice to inspect shall be given to the Contractor. The Contractor shall give all such facilities as the Contract Supervisor may reasonably require for such inspection and examination.

20. CONTRACT PRICE

20.1. The Contract Price will be paid by the Agency to the Contractor as amended by any Variations ordered under Condition 10 (Variations).

20.2. In addition to the Contract Price, the Agency will pay to the Contractor such Value Added Tax (if any) as may properly be chargeable at rates ruling at the time of invoice.

21. INVOICING AND PAYMENT

21.1. Invoices shall only be submitted for work already satisfactorily completed, and accompanied by such information as the Contract Supervisor may reasonably require to verify the Contractor's entitlement to payment. Such invoices will be paid in 30 days from receipt by the Agency.

21.2. If any sum is payable under the Contract by the Contractor to the Agency, whether by deduction from the Contract or otherwise, it will be deducted from the next available invoice.

21.3. If the Contractor enters into a sub-contract with a supplier for the purpose of performing its obligations under the Contract, it shall ensure that a provision is included in

the sub-contract which requires payment to be made of all sums due from it to the sub-contractor within 30 days from the receipt of a valid invoice.

22. INTELLECTUAL PROPERTY RIGHTS

22.1. All Prior Rights used in connection with the Services shall remain the property of the party introducing them. Details of each party's Prior Rights are set out in the Prior Right Schedule to this contract.

22.2. All Results shall be the property of the Agency.

22.3. The Resulting Rights in any Results, and any interim results shall, from the time they arise, be the property of the Agency and the Agency shall be free, should it so wish, to apply at its own expense for patent or other protection in respect of the Results or any interim results. The Agency's intention to apply for such patent or other protection shall be notified to the Contractor. Such applications for patents or other registered intellectual property rights shall be filed in the name of the Agency.

Unless otherwise agreed in writing between the Contractor and the Agency, the Contractor hereby:

22.3.1. assigns to the Agency all Resulting Rights

22.3.2. grants the Agency a non-exclusive, non-transferable (save for the purposes of sub-licensing, reorganisation or transfer to a successor body, for the purposes of all the successor body's normal business use), irrevocable , royalty free perpetual licence to the Agency in respect of all the Contractor's Prior Rights necessary in order for the Agency to use or exploit the Resulting Rights.

22.4. The Contractor undertakes to the Agency not to use, exploit or deal with any of the Agency's Prior Rights, other than in the performance of the Contract unless the Contractor has first obtained a written licence from the Agency, in specific terms to do so.

22.5. The Agency undertakes to the Contractor not to use or exploit the Contractor's Prior Rights, save as provided in Condition 22.3.2.

22.6. The Contractor warrants to the Agency that the performance of the Services, the Contractor's Prior Rights and the Results shall not in any way infringe any intellectual property rights of any third party.

22.7. If the Contractor is prevented from carrying out his obligations under the Contract due to any infringement or alleged infringement of any Intellectual Property Rights, the Agency may without prejudice to any other rights and remedies under the Contract, exercise the powers and remedies available to it under Conditions 13 and 14, Termination and Determination respectively.

22.8. The Contractor shall not be liable if such infringement arises from the use of any design, technique or method of working provided by or specified by the Agency.

22.9. The Contractor waives in favour of the Agency its rights to object to derogatory treatment of the Results of the Work and the Contractor also agrees that he will not assert

or seek to enforce against the Agency and/or any other person, firm or company any of its moral rights as defined in the Copyright Designs and Patents Act 1988 (as amended) without the prior agreement of the Agency.

22.10. The Contractor shall not be liable for any consequential losses, damage or injuries arising from third party misuse of the Results, of which the Contractor is not aware.

23. WARRANTY

The Contractor warrants that the Services supplied by him will be discharged with reasonable skill, care and diligence.

24. STATUTORY REQUIREMENTS

The Contractor shall fully comply with all relevant statutory requirements in the performance of the Contract, including, but not limited to the giving of all necessary notices and the paying of all fees.

25. ENVIRONMENT, SUSTAINABILITY AND DIVERSITY

25.1. The Contractor in the performance of this Contract should adopt a sound proactive environmental approach, designed to minimise harm to the environment, to conserve energy, water, wood, paper and other resources, reduce waste and phase out the use of single-use plastic, ozone depleting substances and minimise the release of greenhouse gases, volatile organic compounds and other substances damaging to health and/or the environment, and be able to provide proof of so doing to the Agency on demand.

25.2. The Agency is committed to ensuring that workers employed within its supply chains are treated fairly, humanely and equitably. The Agency expects the Contractor to share this commitment and to understand any areas of risk associated with this and work to ensure they are meeting International Labour Standards. The Contractor ensures that it and its sub-contractors and its supply chain:

25.2.1. comply with the provisions of the Modern Slavery Act 2015;

25.2.2. pay staff fair wages (and pays its staff in the UK not less than the Foundation Living Wage Rate); and

25.2.3. Implement fair shift arrangements, providing sufficient gaps between shifts, adequate rest breaks and reasonable shift length, and other best practices for staff welfare and performance.

25.3. The Contractor should support the Agency to achieve its Public Sector Equality Duty by complying with the Agency's policies (as amended from time to time) on Equality, Diversity and Inclusion (EDI). This includes ensuring that the Contractor (and their sub-contractors) in the delivery of its obligations under this Contract:

25.3.1. eliminates discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Equality Act 2010;

25.3.2. advances equality of opportunity between people who share a protected characteristic and those who do not; and

25.3.3. fosters good relations between people who share a protected characteristic and those who do not.

25. PUBLICITY

The Contractor shall not advertise or publicly announce that he is supplying Services or undertaking work for the Agency without the Permission of the Contract Supervisor.

26. LAW

This Contract shall be governed and construed in accordance with the Law, and subject to the jurisdiction of the courts of England.

27. WAIVER

27.1. No delay, neglect or forbearance by the Agency in enforcing any provision of the Contract shall be deemed to be a waiver, or in any other way prejudice the rights of the Agency under the Contract.

27.2. No waiver by the Agency shall be effective unless made in writing.

27.3. No waiver by the Agency of a breach of the Contract shall constitute a waiver of any subsequent breach.

28. ENFORCEABILITY AND SURVIVORSHIP

28.1. If any part of the Contract is found by a court of competent jurisdiction or other competent authority to be invalid or legally unenforceable, that part will be severed from the remainder of the Contract which will continue to be valid and enforceable to the fullest extent permitted by law.

28.2. The following clauses shall survive termination of the Contract, howsoever caused: 13, 14, 15, 22, 23, 24, 27, 29, 30, 31, 32 and 33.

29. DISPUTE RESOLUTION

29.1. All disputes under or in connection with this agreement shall be referred first to negotiators nominated at a suitable and appropriate working level by the Agency and the Contractor.

29.2. If the parties' negotiators are unable to resolve the dispute within a period of forty five days from its being referred to them, the dispute shall be referred at the instance of either party to the parties' respective senior managers or directors (supported as necessary by their advisers).

29.3. If the parties' respective senior managers or directors are unable to resolve the dispute within forty five days the dispute shall be referred to the Centre for Dispute Resolution who shall appoint a mediator and the parties shall then submit to the mediator's supervision of the resolution of the dispute.

29.4. Recourse to this dispute resolution procedure shall be binding on the parties as to submission to the mediation but not as to its outcome. Accordingly all negotiations connected with the dispute shall be conducted in strict confidence and without prejudice to the rights of the parties in any future legal proceedings. Except for any party's right to seek interlocutory relief in the courts, no party may commence other legal proceedings under the jurisdiction of the courts or any other form of arbitration until forty five days after the appointment of the mediator.

29.5. If, with the assistance of the mediator, the parties reach a settlement, such settlement shall be put in writing and, once signed by a duly authorised representative of each of the parties, shall remain binding on the parties.

29.6. The parties shall bear their own legal costs of this dispute resolution procedure, but the costs and expenses of mediation shall be borne by the parties equally.

29.7. Any of the time limits in Conditions 30 may be extended by mutual agreement. Such agreed extension shall not prejudice the right of either party to proceed to the next stage of resolution.

30. GENERAL

30.1. Neither party to the Contract will be liable to the other for any delay in performing or failing to perform its obligations (other than a payment obligation) under the Contract because of any cause outside its reasonable control. Such delay or failure will not constitute a breach of the Contract and the time for performance of the affected obligation will be extended by a reasonable period.

30.2. The Contract contains the whole agreement between the parties and supersedes all previous communications, representations and arrangements, written or oral. It is accepted that the Contract has not been entered into on the basis of any representations that are not expressly contained in the Contract.

31. FREEDOM OF INFORMATION ACT

31.1. The Agency is committed to open government and to meeting its responsibilities under the Freedom of Information Act 2000 (as amended) ('Act') and the Environmental Information Regulations 2004 (as amended) (Regulations').

31.2. The Contractor agrees that:

31.2.1. All information submitted to the Agency may need to be disclosed by the Agency in response to a request under the Act or the Regulations; and

31.2.2. The Agency may include information submitted (in whole or in part) in the publication scheme which it maintains under the Act or publish the Contract, including from time to time agreed changes to the Contract, to the public.

31.3. If the Contractor considers that any of the information included in its tender, or that it has submitted to the Agency or that is otherwise contained in the Contract, is commercially sensitive, it shall identify and explain (in broad terms) what harm may result from disclosure if a request is received, and the time period applicable to that sensitivity. The Contractor acknowledges that if it has indicated that information is commercially sensitive, such information may still be required to be disclosed by the Agency under the Act or the Regulations. The receipt of any material marked 'confidential' or equivalent by the Agency shall not be deemed to infer that the Agency agrees any duty of confidentiality by virtue of that marking.

32. DATA PROTECTION

32.1. In the event that the Contract requires data to be processed within the meaning of the Data Protection Legislation the Data Protection Schedule shall be completed by the Parties and provisions and definitions therein shall apply and bind the Parties as part of this Contract.

Appendix to Conditions Services

Ref: [redacted]
Title: Hertfordshire Chalk Groundwater Model Update and GW Emergence Condition

1 Contract Supervisor 3

[redacted]

Address: Environment Agency,
[redacted]

2 Contractor

Mott MacDonald Ltd

Address:
[redacted]

3 Completion 6

Contract Start Date 27/09/2021

Contract End Date 30/09/2022

The Agency will enter into the Contract on the basis that it requires the Services for the Initial Contract Period. However, in entering into the Contract, both Parties acknowledge that circumstances may prevent the Agency from fulfilling the funding requirements of the Contract for the Initial Contract Period. In these circumstances, the Parties undertake to discuss the future scope of the Contract before the end of February 2022.

4 Delivery 11

Address:-
Insert delivery address if different to above

5 Insurance 17

Professional Indemnity Min. Cover £1 million

Third Party Minimum Cover £1 million

Public Liability Min. Cover £1 million

6 Limit on Liability 16

Limit on Contractors Liability £1 million

Specification of Requirement

Hertfordshire Chalk Groundwater Model Update and GW Emergence

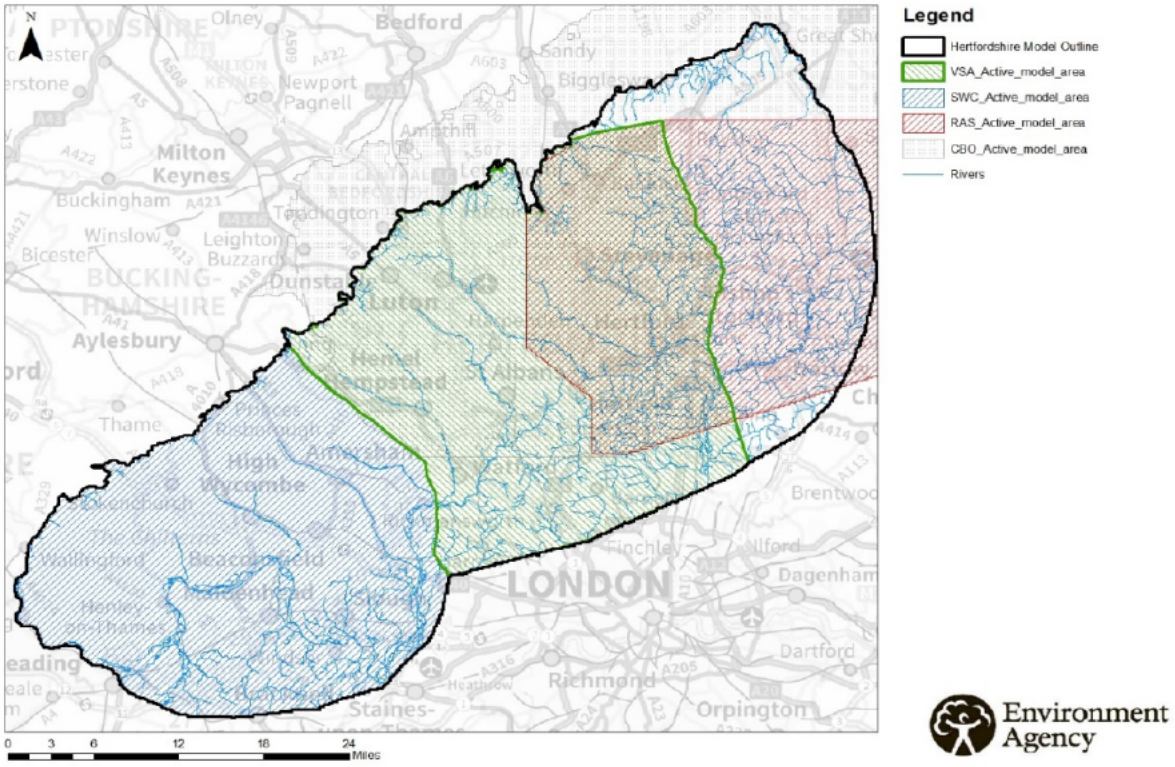
1.1. Background History & Objectives for the Update

Overview of Hertfordshire Chalk Groundwater Model

The Hertfordshire Chalk Groundwater Model (HCGM) represents 4060km2 of the Chalk aquifer to the north-east of London, including the county of Hertfordshire, parts of Buckinghamshire, Bedfordshire, Oxfordshire, Essex, Cambridgeshire, and London. The model represents a number of Chalk streams that are situated in the Wye, Colne and Lee catchments. These catchments have been previously assessed to suffer from large scale over abstraction through the Catchment Abstraction Management Strategy (CAMS) methodology. This area has a high level of public interest and challenge to existing abstraction management (and management tools) particularly in relation to the protection of Chalk Streams. Other pressures include water quality issues such as Bromate contamination and large scale infrastructure projects such as High Speed Rail 2.

The Hertfordshire Chalk Groundwater Model (HCGM) was built by Mott MacDonald between 2017 and 2019. The focus of the HCGM build was to join three existing groundwater models; Vale of St Albans (VSA), Rib-Ash-Stort (RAS) and South West Chilterns (SWC), which covered the area into one single model. Additional input from the Cam, Bedford Ouse (CBO) groundwater model was used where the newly defined boundary of the HCGM extended into the CBO model area. The model is currently used for groundwater management for surface water catchments in the Agency's Hertfordshire and North London (HNL) and Thames areas. Surface water catchments for the Cambridgeshire and Bedfordshire (CAMBED) Area are assessed using the CBO model, which at the time of writing runs up to March 2020.

The objective of this model merger was to overcome the difficulties in assessing the impact of abstractions where such abstractions were located close to model boundaries. Other exploratory work considered in the model build included consideration of how to represent the chalk as a layered system. Overall, in areas where the foundation models overlap and model parameters needed to be merged, the VSA model was used for model parameters in preference to the RAS model, which in turn was given a priority over the CBO model. No further works have been carried out on the structure of the model since its delivery in 2019.
Both the model extent map and basic details of the model configuration are presented below.



Item	Notes
Period	Recharge Model: 1st January 1962 to 31st December 2015 MODFLOW model: 1st January 1968 to 31st December 2015
Stress Periods	Number of Stress Periods: 1728. Each month covers 3 stress periods of approx. 10 days, with the last stress period adjusting the month length. Each stress period has one time step.
Recharge Model	4R Model
Model Code	MODFLOW96-VKD (MF96VKDportable.exe)
Grid	435 Rows x 500 Columns, 200 m x 200 m cell size
Layers	Layer 1 – Chalk above Chalk Rock Layer 2 – Chalk below Chalk Rock
Boundary Conditions	South East General Head Boundary to simulate flows into the London Basin area; Southerly Constant Head boundary within confined Chalk of the south west Chilterns area; Westerly General Head boundary representing River Thames as a boundary condition; and South Westerly River boundary mimicking groundwater flow from the Kennet area into the model area.
Aquifer Parameters	Extracted and retained from foundation models, with minor refinement to base hydraulic conductivity where required. Vertical Conductivity with Depth (VKD) is only active within the SWC and CBO component model areas. During the VSA model build, it was concluded that comparison of simulated and observed heads and flows during model refinement did not indicate that incorporating VKD would have improved the calibration. Pilot refinement runs for the RAS build utilising VKD did not indicate an improvement in model

	calibration at the time of the model build. As such, within the HCGM, the VSA and RAS sections of the models do not have a conductivity gradient nor elevation change in K, with base and max hydraulic conductivity set to be the same. Specific yield (Sy) parameters retained as per foundation models, and are the same for Layer 1 and 2, with some calibration refinement undertaken such as Sy increased to 0.1 in River Lee, Mimram, Beane, Rib, Ash and Stort. Confined storage based on foundation models for Layer 1. Layer 2 was set to 1xE-4 where confined by Layer 1. It had been attempted to implement the coincident storage layer approach used in the VSA model, which would simulate matrix storage processes within the Chalk. However, this was removed as its absence improved flows and groundwater levels in most catchments. The area around the southern boundary of the confined catchment of the River Colne was adversely affected by the removal and so to compensate the VSA matrix storage value of 2x1E-4 was used in this location.
Standard Runs	Historic (Herts116) Naturalised (Herts117) Recent Actual (Herts118) Fully Licenced (Herts119)
NGMS	The standard runs have been configured for the National Groundwater Modelling System (NGMS) as has the 4R model and FlowSource Outputs.

Reporting associated with the model build of the HCGM or any of its foundation models is available on the following sharefile page:

https://ea.sharefile.com/d-sc06d079815904d56a2d5341c2fd5fede
Files will only be available for 30 days from the issue of this ITT.

Overview of Future Project Phasing
The Agency envisages that the long term project for upgrading the HCGM will comprise the following four phases of work:

Phase	Overview of Phase and anticipated tasks
Phase 1: Update of Current Historic model and scenarios (Year 1)	This phase will extend the current model period and enhance or change existing modelling datasets. This is an important foundation for the works scheduled in Phase 2 and Phase 3. Phase 1 will include: Hosting meetings with Agency and relevant stakeholders as part of a project working group Changing and updating Climate Datasets, refining the model where deemed necessary by the project working group Compile and update groundwater level, gauging station and spot flow, incorporating new sites. Borehole Records Compilation for abstractions and observation borehole sites Reviewing and updating abstraction datasets and reviewing discharges to also update

	Characterising and Updating Discharges Review of impacts of Canal Systems (this may be moved to Phase 2 depending on data availability at the start of Phase 1). Updating MODFLOW-96 model files and running the historic model Review model performance after historic run update and need for optional refinement Run standard scenarios Run and assess groundwater emergence scenarios NGMS Configuration (MODFLOW-96) Formulation of Phase 1 Report and Delivery of MODFLOW-96 Files
Phase 2: Formulation of Revised Conceptual Model (Year 2)	This phase will refresh the existing foundation conceptual models and merge them in to a single conceptual model (Phase 2). This will then support proposals for further development of the model in Phase 3. Phase 2 will likely involve the following tasks: Merger of existing foundation models (SWC, VSA, LM) in to one single conceptual model Collation of new relevant datasets Updated Literature Review Initial Assessment of Merged Model Conceptual Model Uncertainty Topography review Mains and sewage leakage and surcharging Analysis Groundwater contouring and groundwater catchment delineation Bypass recharge review Review of influence of superficial deposits Review of unsaturated zone processes Review of recharge model parameters Geological Model Development Flowing and Artesian Features Analysis Aquifer Properties Update Karstic Features Update Review of Evidence for Hydrogeological Layering Review of Impacts of Abstraction Investigations and Changes Update of conceptual model water balance Review of model boundary conditions Update of surface water/groundwater conceptual Model Proposals for development and refinement of numerical model in MODFLOW 6 Formulation of Phase 2 Report
Phase 3: Development and Refinement of the Historical Model in MODFLOW 6 (Year 3)	Depending on the conclusions of Phase 2, this phase will be the conversion of the modelling code to the current MODFLOW code, MODFLOW 6, and refines reflect updated conceptual understanding. Phase 3 will likely include the following tasks: Construction of MODFLOW 6 Model Model Refinement Sensitivity Analysis Re-run of Standard Scenarios NGMS Configuration (MODFLOW 6) Formulation of Phase 3 Report
Phase 4: Training and User	Once the MODFLOW 6 model has been completed in Phase 3, a period of training and model support will need to be provided. This will likely include the follow tasks: Compilation of a User Manual

Support (Year 4)	Provision of a Model Training Course Provision of Model Support

This Contract is for the first phase of works (Phase 1) only and not for the subsequent Phases 2, 3 or 4. These subsequent phases are to be hosted over a number of financial years subject to Agency funding. The likely tasks have been presented above as they hold relevance to some of the tasks being carried out under Phase 1.

1.2. Aims and Objectives of the Project

Overview of Objectives

The primary focus in this Phase1 project is to update the existing MODFLOW-96 model with new climatic datasets, refreshed artificial influences and observed data with post-2015 data and information that is now available to us. This will then lead to a model review and optional refinement. The objectives and associated tasks to be executed are summarised below:

Objective Description	Key Tasks
1. Reconfigure model with the new climatic datasets (HadUK Rainfall and EA-PET)	Change rainfall and PET data to HAD-UK gridded rainfall data and EA-PET gridded data. Review changed dataset run and compare with baseline Herts116 run, refine 4R parameters if significant changes observed and recommended by project working group.
2. Update and incorporate new observed flow and groundwater level datasets to the calibration dataset and update from 2015 to 2020	Compile Agency and Third Party, such as Water Company, groundwater level data to add new sites to existing calibration groundwater site listings and extend all subsequent sites to 2020. Compile and update Agency gauging station flows for all existing sites to 2020, reflecting on possible inclusion of CBO gauged flow sites. Compile Agency and Third Party data spot flow data sets to update gauged flows listing to 2020 for accretion profiling.
3. Build up dataset of depth and construction of abstractions and observation boreholes within the model	Compilation of a dataset of known borehole depth, construction and lithology for groundwater abstraction and observation boreholes
4. Review and bring the artificial influences time series up to date from 2015 to 2020, improving on how they are currently characterised within the model	Agree and set abstraction thresholds for inclusion in the model Review and update existing groundwater abstractions and discharges for MODFLOW Review and update existing surface water abstractions for 4R Compile and incorporate adit information Review current surface water discharge methodology, and develop a discharge characterisation methodology to be used in the model Correct and update discharges as per the new methodology

	Set standard scenario (Recent Actual, Fully Licenced and Future Predicted) rates and compare with WRGIS/CAMS ledger rates Review impact of canal systems – Grand Union and Stort Navigation.
5. Update and run model	Update 4R and MODLFOW files (RCH, STR, BAS, OC, GHB, and RIV) for the extended period and the historic model run. Correct identified flow routing errors in stream file.
6. Identify a Groundwater Emergence Baseline	Gather data and evidence on historic groundwater flood events in catchments of concern Develop local conceptual understanding of the areas of interest around the abstractions to be reduced.
7. Conduct review of the Hertfordshire Chalk Groundwater Model, performance, with particular focus on model's response to abstraction changes and groundwater emergence risk.	Review pre- and post-update calibration and report on the impact of the update on calibration outcome, including water balance between Thames and Anglian catchments. Review changes in abstraction regime since 2010 on pre- and post-update model calibration. Review model responses to groundwater flooding events (in particular the winter of 2000/01 and 2013/14) Refine model pending approval of project working group where deemed necessary
8. Run standard scenarios	Run standard scenarios (Recent Actual, Fully Licensed, Future Predicted and Naturalised) on the updated model.
9. Run bespoke sustainability reduction runs	Run switch off runs within the Historic model of proposed sustainability reductions for groundwater abstractions, to then assess the risk of groundwater emergence from sustainability reductions.
10. Update NGMS Configuration (MF96)	Update the existing NGMS version of the model for all scenarios (historic, fully licenced, recent actual, future predicted and naturalised) as required.
11. Reporting (Phase 1 and groundwater emergence risk)	Compile and issue a report of works done, making any recommendations for Phase 2. Compile and issue a report in to study of groundwater emergence risk from sustainability reductions

Further details expanding on the requirements of the individual tasks is presented below in the work scope summary.

2. Work scope summary

Obj. No.	Task	Purpose	Overview	Outcomes
1	Task 1 Study Inaugural Meeting	The Study will be launched at a one-day Inaugural Meeting, to be held either at the Agency offices in Welwyn Garden City or Reading or remotely via Microsoft Teams, and attended by two senior representatives of the Consultants project team (the Project Manager and Senior Modeller) and the Project Steering Group (including the independent modelling expert). As part of its proposal the Consultant will be expected to indicate what they consider to be the key items to discuss and to examine during the meeting		
1	Task 2 Changing and Updating Climate Datasets	Newer datasets in the form of HAD-UK gridded rainfall data and EA-PET gridded data are now available and are being embedded into EA regional models. The existing CERF rainfall dataset and EA areal estimated of PET will need to be replaced and the time periods extended to either March 2020 or December 2020 to make the model climate datasets current.	Rainfall and PE grids for the 4R model will need to be generated for the 4R model start (1965) and extended to the end point (31st March 2020). A decision will be made nearer the time as to if EA-PET or EA-PET-I data should be used. These will then be applied to the current 4R historical run period and setup (4RHER059) and rch and str files applied to the current Historic MODFLOW model (Herts116) model period and set up. This is to allow a direct comparison of model calibration where rainfall and PE are the only inputs to have been changed. The change from the current rainfall dataset (CERF) to HadUK and the change from the current PE dataset (EA areal estimates) to EA-PET data, may introduce calibration changes to the MODFLOW model. The changed dataset run and the baseline run of Hert116 will need to be compared and calibration changes reviewed by the Consultant and Project Steering Group. Where the calibration has significantly worsened model wide, there will need to be an initial refinement of 4R parameters in line with foundation conceptual models to improve calibration. It	Rainfall and PET datasets in the 4R model are replaced and extended, so that the recharge model can be run up to March 2020 (or December 2020). The model is refined where required to account for the change in datasets.

			is anticipated that MODFLOW hydraulic properties would only be refined where calibration changes are particularly drastic. Once finalised, the new PET and rainfall datasets will need to be extended to March 2020 or December 2020 as the case may be.	
2	Task 3 Compile and Update Ground water Level Datasets	To review the calibration quality of the updated model, observed groundwater level time series will need to be extended. Through model use, it has been identified that there are a number of EA OBHs that are currently not included within the 239 groundwater calibration targets in the model area, along with new groundwater level data sets from projects such as Water Company WINEP investigations, HS2 and Bromate investigations. These datasets need to be embedded into the observed data set where appropriate to aid model calibration and conceptualisation.	Existing observation boreholes within the calibration workbook will need to be reviewed against a groundwater level data provided by the Environment Agency to review if any data before 2015 is missing, both with respect to dip data and logger data. If it is, it should be incorporated within the observed time series update to the proposed model end date, March 2020 or December 2020. All data should be quality assured and cleaned up for errors, and a log provided, identifying ownership of the boreholes and corrections made. Where these are EA OBH, a log of identified errors and corrections should be supplied so that the source data in WISKI can be corrected. From the groundwater level data provided, new sites and their groundwater level time series will need to be populated to March or December 2020, where they are deemed relevant to the study and of good enough quality to aid model calibration. At the time of writing it is anticipated that there may be the following records available, though these numbers may be subject to change as datasets are compiled: 556 EA OBH boreholes (this includes the current 239 HCGM calibration sites) Water Company WINEP groundwater level sites (number to be confirmed) 183 HS2 groundwater level monitoring sites 59 Bromate groundwater level monitoring sites	New groundwater level time series are added to the existing calibration worksheets and the existing groundwater level calibration sites are extended to March or December 2020. High frequency logger data is compiled and all data cleaned up and corrected for errors.

			It is not anticipated that every single site in the above list will be incorporated into the calibration worksheet but rather those that will aid both a short term understanding of model calibration and the conceptual model update in Phase 2. Sites with identified high frequency logger data stored in an accessible format separate to the groundwater calibration workbook to enable conceptual analysis in Phase 2. For the calibration worksheet, the logger readings that align with the end of a stress period should be used to update the groundwater calibration sheet (e.g. for stress period ending 10/01/2018, groundwater level reading at 10:00am for 10/01/2018 should be used if available and there is no dip reading available). It is assumed that a selection of OBH from the CBO post processing spreadsheets will be made available and can be incorporated into the model. A selection of sites within the HER/CBO overlap should be incorporated into the groundwater calibration sheets to later be used to check model positioning of groundwater divide and responses to recharge. A number of observation boreholes in the model area may have been re-surveyed, and their datum is likely to have changed. This will need to be accounted for within existing calibration spreadsheets.	
2	Task 4 Compile and Update Gauging	Flow gauge calibration worksheets will need to be updated to extend the 49 flow calibration targets observed mean daily flows to the	As gauging stations can undergo quality assurance every five years, current Gauging Station Data Quality (GSDQ) information will be provided. The full record of each gauge used as a calibration target will be supplied to compare to the existing observed time series within the calibration	Existing river flow calibration worksheets are extended to March or

	Station Flows	proposed model end date of March or December 2020. This is to enable a review of the flow calibration of the model once the model period is extended.	sheets. These have been compiled from various stages of model development and updates, and may not have been updated for changes in the gauges rating. Decisions will then need to be made as to the need to replace the whole observed record within the calibration sheet with the new mean daily flows, where these differ from the current calibration worksheet. It is assumed that a selection of gauging stations from the CBO post processing spreadsheets will be made available and can be incorporated into the model. A selection of sites within the HER/CBO overlap should be incorporated into the flow calibration sheets to later be used to check model outflows within the northern parts for the model and explore model representation of catchment water balance during conceptual model work.	December 2020. All data cleaned up and corrected for errors, with an understanding of the quality of the gauge captured.
2	Task 5 Compile Spot Flow Data Sets	To extend accretion profile datasets to enable a review of the flow calibration of the model once the model period is extended.	Accretion profiles from the HCGM within the Rib, Ash and Stort catchment are uncertain as there has been no comparison to existing spot flow data. Other accretion profiles have not been updated with new spot flow data gathered by the EA or Water Companies since the original foundation models. Environment Agency spot flow data from WISKI and spot flows gathered from Water Companies should be collated to update the existing observed spot flow data within the HCGM accretion profiles. This data should then be compared to model outputs to understand goodness of fit of accretion profiles. Once compiled, this dataset should be reviewed to understand what gaps exist within the model area's spot flow dataset and recommendations made as to potential sites to resolve this. Where there is time and resource, the Environment Agency may be able to commission a collection of spot flow gauging rounds, to later aid	Existing flow accretion profile workbooks are extended to March or December 2020. All data cleaned up and corrected for errors, with an understanding of the quality of the gauge captured.

			conceptualisation and review model representation of accretion.	
3	Task 6 Borehole Records Compilation	Currently the majority of abstraction boreholes and groundwater level calibration targets are assigned to the lowest model layer (Layer 2). Collation and review of borehole construction details is necessary to ensure boreholes are assigned to the most appropriate model layer. This is important for the current HCGM calibration and also for possible future, multi layered models (Phase 3). This is also important for identifying sources that may be monitoring or abstracting from either or both the Chalk and Upper Greensand.	From borehole records and datasets provided by the Environment Agency, and those available on the BGS GeoIndex, all groundwater calibration sites and groundwater abstractions and boreholes should have their depth, installation and known geological log details compiled to help note in the calibration sheet what layer the target or abstraction should be assigned to. All data should be compiled either in an Excel Spreadsheet format (preferred) or Microsoft Access Database.	A dataset of known borehole depth, construction and lithology is compiled that enables the layer that the borehole monitors or abstracts from to be updated in the calibration or abstraction workbooks.
4	Task 7 Reviewing and Updating Abstraction Datasets	In order to update the recharge and groundwater model period, groundwater and surface water abstraction time series will need to be extended. A number of errors in the existing model abstraction series also need to be corrected to ensure a better representation of abstraction over time.	Abstraction Thresholds - Currently the HCGM does not have specific thresholds for which abstraction sites should be included within the model, as the criteria for the foundation models varied. Therefore, the Consultant will need to review and recommend specific thresholds to identify which abstractions should be included within the model. Using these thresholds, new abstraction sites that fall within these thresholds for inclusion. This is likely to include new abstraction licences that were previously exempt for abstraction licensing, for which there will be limited or no historic returns data.	Groundwater abstraction and surface water pre-processing spreadsheets are corrected for errors and data extended to enable creation of a new .wel file and a new profiles of

			Review and Update of existing groundwater abstractions for MODFLOW – An export from the EA's ALHA and NALD database will be provided covering the model area, which will need to be used to review and extend existing 1247 abstraction time series as well as add any new abstractions that have been licensed since 2015. It is assumed that the .wel file generating spreadsheets for the CBO model will be provided and therefore abstraction return data from Anglian region will not be required for abstractions that lies outside of Thames and HNL catchments. A review of the .wel file generating spreadsheet shows has shown a number of errors for existing abstractions that need to be corrected: some abstraction sites that have positive values (i.e. are acting as discharges) A number of sites have no abstraction assigned to them though they would have been operational in the early phases of the model before the 1980's. The records of these abstractions are locked up in microfiche records. Recent modelling work that has been undertaken has also identified a handful of public water supply abstractions which are wrongly positioned within the groundwater model Chadwell Spring PWS is in the groundwater model as well, while it is a spring source and should be treated as a surface water abstraction within the 4R model Other errors may be identified before the start of the study. A detailed review of public water supply abstractions and other large abstractions (daily peak licence is greater than 1 Ml/d) needs to be undertaken. This will need to confirm: Site location within the model domain Number of boreholes / wells for the abstraction	surface water abstractions for the updated model period.

			Quality assurance of abstraction records, once these have also been updated from NALD return data to the end of the expanded model period. Once reviewed, where these are public water supplies, these should be validated by the relevant Water Company. Compile Adit Information – From source protection zone development, it has become clear that a number of PWS abstractions have adit systems that could be incorporated within the model. Data on the adit sites need to be compiled and reviewed. Where these are longer than the current 200 m cell these could be incorporated within the current HCGM model, using a similar methodology to the East Kent model if it is warranted. This incorporation could wait until Phase 3 of the study. Review and Update of existing surface water abstractions for 4R - similar to the groundwater abstractions, the existing 298 surface water abstractions need to be reviewed and updated, adding new sites that have come on line since 2015. It is assumed that the surface water abstraction generating spreadsheets for the CBO model will be provided and therefore abstraction return data from Anglian region will not be required for surface water abstractions that lie outside the Thames and HNL catchments.	
4	Task 8 Characterizing and Updating Discharges	There are known errors with how some of the 164 surface water discharges are characterised, in particular sewage treatment works (STW), and inconsistencies as to how these are	Current reporting was unclear why the historic characterisation of discharges had been changed in later times of the model period from the foundation models. Currently these are based on a mix of estimated or consented DWF in the majority of the model period and in the last ten years, the use of measured effluent returns as a time series, which may be double counting runoff estimates	Discharge characterisation Methodology and Update Summary presented to Project Steering Group. The

		characterised across the model domain. These need to be resolved, and the discharge time period extended, to improve the characterisation of the artificial influences within the 4R model.	generated by the 4R recharge model. In addition a number of STW were identified as missing or double counted (one in the 4R model and one in the groundwater discharge) within the sections of the model. The Consultant will undertake a review of how discharges are represented in the model and a proposed methodology as to how to characterise discharges should be applied. As per the methodology agreed with the Project Steering Group, discharges (both surface water and groundwater) will need to be corrected and then extended to the new model end date. It is assumed that the CBO model discharges will be made available and can be applied direct to those sections of the model that lie outside the Thames and HNL catchments.	surface water discharge pre-processing worksheets are corrected and updated to a new discharge characterisation methodology and incorporated in to the updated 4R model period.
4	Task 9 Review of impacts of Canal Systems	The canal systems are currently not incorporated into the HCGM model, as they were assumed not to have a bearing on regional groundwater flows. However, EA water resource assessment includes losses and transfers due to canal operations for some model catchments. Work is required to understand if these are important to modelled flows and should be incorporated within the HCGM to improve flow representation.	Currently key canal systems that need to be explored are the Grand Union Canal and the Stort Navigation. It is anticipated that a data set of canal operations and losses will be provided by the Canals and River Trust and supplied to the Consultant via the Environment Agency. The impact of these systems on surface water flows should be revisited and determined if this should be applied as surface water abstraction or other loss within stream cells of the model.	How canal systems interact with surface water flows in the model is better understood and dummy surface water abstractions and discharges applied to the stream cell network of the model where appropriate. This task may be pushed to Phase 2 depending on data availability at

				the start of Phase 1.
4	Task 10 Set Standard Scenarios rates	The HCGM will be used to support water resource activities such as CAMS and WFD. As such model runs representing Naturalised, Recent Actual (RA), Future Predicted (FP) and Fully Licensed (FL) will need to be set up and run within the HCGM. As the model is likely to be used ahead of the completion of a MODFLOW 6 model, these scenarios need to be available in the MODFLOW-96 version of the model.	While the historic groundwater and surface water abstractions and discharges are being characterised, at the same time abstraction and discharge rates from the area CAMS ledgers or WRGIS should be compiled to set RA, FL and FP rates. This will enable some cross referencing between historic abstraction/discharges and the CAMS ledger rates to identify if either dataset is in error. It is assumed that the scenario rates for CBO artificial influences will be directly transferable from the CBO model file for catchments outside of Thames and HNL. These rates should then be used to generate new 4R input files for surface water abstraction and surface water discharges and new .wel files for groundwater abstraction. These scenario rates will be applied to standard scenarios applied in Phase 1 and Phase 2.	Scenario rates are updated for artificial influences so that standard scenarios can be run during the end of Phase 1 and in Phase 3.
5	Task 11 Updating MODFLOW-96 Model Files and Running Model	This task will amend identified errors in some of the model files and extend their model period so that the updated model can be run.	From reviews of the stream file network for CAMS assessment, a number of flow routing errors have been found around CAMS assessment points. These should be amended within the 4R model to enable better representation of flows for resource assessment. Works on refinement of the bifurcation of the Maidenhead Ditch system during the South West Chilterns model update in 2016, which wasn't incorporated into the HCGM, will need to be reviewed to determine how this could be set up within the HCGM stream file network. Once above tasks are completed, the 4R and MODLFOW files will need updating for the extended period within the .RCH, .STR, .BAS, .OC, .GHB and .RIV files, and the historic model run. Model outputs will need to be	Updated model input files and output files, and post processing results of groundwater level and flow time series for calibration targets, flow accretion profiles and groundwater contouring.

			processed to generate head and flow outputs to update post processing spreadsheets and GIS outputs.	
6	Task 12 Identify a Ground water Emerge nce Baseline	To ensure there are no discrepancies in the data provided and those in the groundwater model, and to understand factors likely to contribute to extent and increased risk of groundwater emergence.	Datasets provided by the Environment Agency will need to be reviewed to collate data and other evidence on historic flooding events in the Beane, Chess, Colne, Gade, Lee, Mimram, Misbourne and Ver catchments, with a particular focus on the groundwater flood events of 2000/01 and 2013/14. This will include current groundwater levels used for Environment Agency Groundwater Flood Alert sites in these catchments. A local conceptual understanding will then need to be developed of identified reaches of flood interest around PWS abstractions, of which 21 are scheduled for licence reductions, in these catchments. Consideration will need to be given to superficial geology and potential for made ground to influence flow to the surface.	Delineated likely extent of possible groundwater emergence and conceptual understanding developed within catchments of concern, and estimates of number of properties that might be affected.
7	Task 13 Model Perform ance Review after Update and optional refineme nt	The updated MODFLOW-96 model will be used as an interim model before the completion of the conceptual model (Phase2) and MODFLOW 6 model build (Phase 3). A review of the model's calibration in light of new monitoring data and its ability to represent recent abstraction reductions need to be undertaken to vet the model's ability to be fit for purpose of intended model	The calibration of the model after update shall be reviewed in detail to understand any calibration changes that have occurred as part of the update or new calibration sites. The calibration will need to review how the model captures high and low groundwater levels which are important to understanding the quality of the recharge model and impacts on groundwater emergence and drought scenarios, and where further work on the conceptual model may be required. For high groundwater levels particular focus should be made on the high groundwater level events of 2000/01 and 2013/14, as this will aid Task 15. Calibration review will also need to review how well the model captures the balance of groundwater flow and river flow outputs between the Thames and Anglian catchments.	Comprehensive comparisons between field and modelled results will be made and presented in a technical note on model calibration will be written and issued to the Project Review Group to aid the decision as to if further refinement

		uses. This will aid decision and implementation of any proposed refinement works.	The calibration record of the existing HCGM set-up gives an indication of how well the model captures changes in heads/flow/abstraction rates since 1970. Larger scale changes in abstraction regime have been implemented in a number of catchments between 2010 and 2020 alongside targeted monitoring of observed response undertaken by Affinity Water. A review of how the current model set-up captures observed hydrogeological changes in response to these larger scale abstraction changes should be undertaken, to aid determination of confidence in current model performance and calibration. Changes to abstraction regime will be based on a log provided by the EA. This will help better understand model performance and sections of the conceptual model that will need to be reviewed further in Phase 2. Upon conclusion of the above review, it may be decided by the Project Steering Group that interim refinement work will need to be undertaken on critical catchments and this will need to be undertaken. However, this will need to be decided in the knowledge that the works may quickly be superseded by the MODFLOW 6 model and may not be an efficient use of project resources.	work is required. lots showing gaining and losing reaches of streams
8	Task 14 Run Standard Scenarios	Once the final historic model is prepared the standard scenario runs will need to be run at the rates developed under Task 9.	Once updated and a final historic model run agreed if refinement is undertaken, the standard scenarios of the Recent Actual, Fully Licensed, Future Predicted and Naturalised will need to be implemented and run.	Model input and output files processed and post processed model outputs profiles of scenario groundwater level time series and

				contouring, river flow hydrographs and accretion profiles, and plots of gaining and losing reaches of streams.
9	Task 15 Identify a Ground water Emerge nce Risk using HCGM Scenario s	To fully understand the risk of groundwater emergence from licence reductions and identify any necessary actions to follow.	Use the Hertfordshire Chalk Groundwater Model with 21 PWS abstractions either reduced or switched off as per agreed sustainability limits to do the following: • Identify a groundwater level close to areas of identified flooding which if reached would infer groundwater flooding is occurring in this area, be it an existing Environment Agency Groundwater Alert site or other monitored groundwater level site. • Assess if the frequency and/or duration of groundwater flooding events would have increased historically had the abstractions not been active by looking at switch off runs and any signal test, supply outages or pumping test data available for PWS to inferred groundwater level rebound. • Create contour maps of highest recorded levels plus groundwater rebound and compare contours with surface elevation to identify areas with potential for groundwater emergence and risk of groundwater flooding. • Use of UKCP18 data to model future recharge and the groundwater response for an agreed selection of scenarios. • If outcomes above show likelihood of significant groundwater flooding risk, new scenarios will be run within	Risk of groundwater emergency from proposed sustainability reductions is better understood through mapping and model runs, and options for mitigation regarding seasonal use or level constraints has been assessed.

			the HCGM either with a groundwater level constraint or seasonal use limits applied to the abstractions instead of total switch off to review if this would reduce flood risk while at the same time protect low flows	
10	Task 16 NGMS Configuration (MODFLOW-96)	The existing National Groundwater Modelling System (NGMS) configuration for the model should be updated to enable the Water Companies easier access to the model for interim use head of the MODFLOW 6 model delivery. This task is to be costed for, so that the Water Companies can decide if they could fund this task on the project study.	This would require updating relevant time series within the configuration (abstractions, observation files etc.) and updating the MODFLOW groundwater model Module files, where these have been changed during model update. This would be carried out for all scenarios (historic, fully licensed, recent actual, future predicted and naturalised).	An updated NGMS configuration will be supplied to the Environment Agency and Water Company.
11	Task 17 Formulation of Phase 1 Report Study, and Delivery of MODFLOW-96 Files	The Phase 1 report will explain clearly how the model and supporting datasets have been updated and where necessary, refined. Any uncertainties or inadequacies of the model should be stated, reflecting on intended model uses, and possible methods of resolving these uncertainties (by field work and/or further model development) should be explained.	The Phase 1 report with Appendices (such as the log of the important model runs and complete sets of figures showing how any model refinement led to an improved simulation) should provide a comprehensive record of the methodologies adopted and the findings of the Phase 1 study. The report will summarise the calibration review and make recommendations for the Phase 2 study. An electronic copy in Microsoft Word of the draft Phase 1 report should be presented for review by the Project Steering Group. The report will present the works undertaken under Task 1 and Task 14, and any recommendations for further works or data collection under the Phase 2 study. The Consultant shall state clearly within	Final report produced presenting model update, review and proposals.

			the report the assumptions and limitations made within the calibrated model. This draft report will be presented and discussed at a progress meeting between the Project Manager and Senior Modeller of the Consultant and the Project Steering Group. The Consultant should allow up to three weeks for consideration by the Agency of the draft report and any modifications required for the final Phase 1 report. Any presentation materials used during the meeting should later be made available to the Agency. An electronic copy of the final version of the report (including colour maps where appropriate) will be issued within one month of this meeting. The Consultant should make available the model input and output files to the Environment Agency.	
11	Task 18 Ground water Emerge nce Risk from Sustaina bility Reductio ns Report	To produce a report that the Environment Agency can use as basis for planning needed actions and to support decision-making.	A concise report will need to be produced that presents methodology, results and recommendations with respect to the works undertaken in Tasks 12 and Task 15. If any refinement work related to aiding calibration for high groundwater levels has been undertaken in Task 12, this should be captured in the Task 17 Reporting task, and should be briefly summarised in the Task 18 reporting, with reference made to the final Phase 1 report.	Final report produced presenting groundwater emergence dataset collation, conceptual review and outcomes of modelling work.

2.1. Obtaining Data and Information

The following datasets may be available either at the start of the project or as the project develops. This is not an exhaustive list, and other datasets may be identified as the project progresses.

Data Source	Comments and Constraints
HCGM Groundwater Model Files - Agency	The latest version of the groundwater model and utilities will be packaged up and provided by the South East Groundwater Modelling Unit. Conceptual Models for the foundation models will be supplied. Foundation numerical modelling files for the foundation models can also be supplied.
Abstraction details and returns Agency - NALD / BOXI / ALHA / Microfiche	Monthly abstraction returns will be held on National Abstraction Licence Database (NALD) and will be extracted by local Integrated Environmental Planning (IEP) team via Business Objects XI (BOXI), as will be new, revoked or varied licences. It is anticipated that there will be a few New Authorisation abstractions that may need to be included into the model that are currently absent. Details of these should be available from NALD and BOXI where they have been licensed, though there is unlikely to be much historic information on previous abstraction rates where these have been previously exempt from licensing. There are some large abstractions in operation before 1980 that have zero abstraction in the model during this period. This may be due to no returns entries on the Abstraction Licence History Archive (ALHA) system. As some microfiche records have been scanned and are more accessible than they used to be, for the largest abstractions this archive can be made available to extract this data for significant licences.
Water Company Liaison	Due to data entry or export errors, returns data can sometimes result in incorrect monthly totals. There has been on the previous HCGM project good success in getting Water Companies to review the abstracted returns and correcting any errors. The majority of public water supply abstraction in the groundwater model is by Affinity Water, Thames Water and South East Water. It is assumed that abstractions in the CBO model have already undergone a similar review process by the Water Companies.
Agency - History of large abstraction changes	After the model period has been extended, a review of how the model captures hydrogeological changes in response to large abstraction changes and observed datasets should be undertaken, especially those that have been implemented between 2015 and 2020. Therefore a log of major reductions or increases in abstractions within the model area will be provided.
Agency - Resource Assessment Methodology (RAM) Ledger Spreadsheets	The following ledgers will be provided: The Colne ledger, the Lee ledger, the Roding, Beam, Ingrebourne ledger, the Cherwell, Thame and Wye and the Thames Corridor ledger. A copy of WRGIS can also be provided. It is assumed that the rates for CBO artificial influences will be directly transferable from the CBO model files.

Data Source	Comments and Constraints
Discharges Agency - CAMS, Water Information Management System (WIMS) and Water information systems Kisters (WISKI)	Daily effluent discharge totals for STW within the model area can be provided for the majority of STW within the model area where available within the WISKI archive. The data typically starts in 2005 and ends in 2020, though there can be older periods of effluent returns for some STW in the model area on WISKI. A WIMS export will provide information on all consented discharges, including details of location and consented dry weather flows (DWF). Some effluent returns will have DWF estimates compiled for CAMS assessment work that can be provided.
Groundwater Levels - Agency - WISKI	The Agency will provide a full export of groundwater level data available within the model area, for both active and inactive groundwater level monitoring sites monitored by the Environment Agency. Most sites will either be monthly dips or on telemetry, with logger sites being visited typically every three months. A review of some recent model updates has flagged that telemetry or logger data has been missed as part of the groundwater level time series, with the targets only being updated for dip data. Logger data will be provided for all sites where this is available. Due to the transfer from WISKI6 to WISKI7, there have been some issues in the past with below ground and mAOD levels, so it is worth having the exported dataset QA'd with original calibration data and area staff. There may be a few Agency groundwater level sites that have recently been drilled and are currently monitored, but are currently absent from the WISKI database. These will be provided as a separate dataset to the WISKI export. It is assumed that a selection of OBH from the CBO post processing spreadsheets will be made available and can be incorporated into the model. This is important for a selection of sites to be used to check model positioning of groundwater divides and responses to recharge.
Groundwater Levels – Third Party Monitoring	A large volume of groundwater level monitoring over the last ten years has been collected by the Water Companies under various AMP/RSA/WINEP investigations. This is currently being centralised and will be provided at the start of the study. Over the last two decades a large dataset of groundwater level and groundwater quality data has been collected during investigations in to the Bromate Plume within the model area. Groundwater levels collected over this period could act as additional calibration targets within the model, especially where there are gaps in the hydrometric network. Currently, data licensing to this dataset is being explored – provided that it can be released, an export of this dataset will be provided. HS2 runs through the model area, in particular the Misbourne catchment, and the model is likely to be used more to understand its impact in the future. Recent groundwater level data (dip and logger) and groundwater quality data collected between 2016 and 2020 may provide an additional calibration dataset for the

Data Source	Comments and Constraints
	Misbourne as well as provide some high frequency groundwater level data from loggers.
River Flows - Agency - WISKI	Mean daily flows for each site can be extracted from WISKI. The full periods of record will be provided to check any changes in the gauged flows currently being used for model calibration. Gauging stations can undergo quality assurance every five years and the results of these will be provide with the mean daily flows. It is assumed that a selection of gauges from the CBO post processing spreadsheets will be made available and can be incorporated into the model.
Spot flow data Agency - WISKI	All spot flow data collected by the Agency and stored on the WISKI archive will be provided for the whole of the model area.
Spot flow data - Water Company Datasets	A large volume of spot flow and river level monitoring over the last ten years has been collected by the Water Companies under various AMP/RSA/WINEP investigations. This is currently being centralised and will be provided at the start of the study.
Rainfall - Agency	HADUK gridded data will be available at the start of the project up to December 2020.
Agency - WISKI	Daily rain gauge readings for rainfall stations present in the model area will be provided where available as a WISKI export.
Potential Evaporation Agency - WISKI	EA- Potential Evapotranspiration (PET) gridded data are now available and will be available up to present.
Springs and Sources Agency - Network Drives	Thames area and HNL area datasets are available on springs and sources surveys. Typically these are monthly field visits that record (qualitative) flow and non-flowing sections of the ephemeral stretches of local water courses and typically cover the last fifteen years of the model period. It is anticipated that this will be useful for Phase 2 but could be provided to aid groundwater emergence work.
Borehole Logs Agency - Boreholes Wells and Springs (BWS) / Wellcards /	There is a need to compile a model wide dataset of borehole logs as this is relevant for future layering (so installation details, depth, geology etc. need to be known for groundwater abstractions and OBH). Relevant for improving layer OBH and abstractions are assigned to now and in future. This will be in part an export from BWS and supply of electronic copies of well cards. The British Geological Surveys' GeoIndex can also be used as a resource for this data.
Borehole Information - Water Companies	Information on borehole logs, adit locations and geophysics records for Water Company abstraction and observation boreholes may be available.
Geophysics - Agency	There is ongoing work on compiling digital logs collected by the Agency since the 1970's and there should be a digital dataset available by the end of June 2020. Geophysical logs that are present in the model area will be provided at project start. This may be complimented by Geophysical logs collected by the Water Companies.

Data Source	Comments and Constraints
Canal Systems - Canal and River Trust	Currently the HCGM doesn't include canals within the model. However, area water resource assessments indicate that there may be key losses and transfers due to complex canal operations within the HCGM stream cell network that are currently unrepresented. Key canal systems that need to be explored are the Grand Union Canal and the Stort Navigation. Data on these systems will be sought from the Canal and River Trust. We do not currently know the extent and quality of this dataset.
Groundwater Emergence Datasets	Anecdotal evidence, including data and reporting, for historic insights and reports of flooding in key catchments. Data showing how the catchment's groundwater flood trigger levels have been established for Groundwater Flood Alert Sites.

2.2. Deliverables

The following table presents the outputs that are expected to be delivered at various stages as the project is being completed. Anticipated dates of completion after Contract Start are also provided as a guide, though these can be adjusted in proposed project programme requested in the Technical Questionnaire (Appendix A).

Deliverable	Responsible parties	Anticipated date of completion after Contract Start
Project Data Sets Provided	Agency	1 month
Project Start Up virtual meeting with Project Steering Group	Agency / Consultant	1 month
Presentation of outcomes of change to HadUK and EA PET and any necessary refinement works	Consultant	2 months
Discharge characterisation methodology presented to Project Steering Group	Consultant	3 months
Dataset of borehole records for OBH and abstractions in model	Consultant	4 months
Model Performance Review Technical Note for discussion at Project Steering Group	Consultant	6 months
Updated model files and supporting spreadsheets with new datasets (climate, abstractions, discharge, flows and levels) and refined where needed Hertfordshire Chalk Groundwater Model*	Consultant	9 months
Associated pre- and post-processing tools and GIS products*	Consultant	9 months

Model files and post processing associated with standard scenarios and groundwater emergence runs*	Consultant	9 months
Acceptance Testing of Model Files	Agency	Within 2 weeks of receiving files
Phase 1 Technical report	Consultant	10 months
NGMS Configuration	Consultant	12 months
Groundwater Emergence Study Report	Consultant	12 months

Please refer also to Appendix D: Consultants Deliverables for modelling studies – checklist guide

APPENDIX D.docx

All tools and files developed under this project should be compatible with the following Environment Agency's systems listed below and must be capable of functioning seamlessly with any future update of the applicable software products.

Software	Current Network Version
Windows Version	Windows 7 Enterprise
ArcGIS	ArcMap 10.4.1
Groundwater Vistas	Version 6.07 Build 6
Microsoft Office	Microsoft Office Professional Plus 2013
Python	Python 3.7.4 We are unable to update python libraries due to security restrictions on our Central Modelling Platform. Where newer versions are required, the python packages should be supplied with the model files.

2.3. Skills of Personnel Required

The Consultant's project team will need to provide as a group the following skills set:

Project managers who are competent in project administration and communication for and with adequate technical knowledge relating to all aspects of the groundwater modelling project.
Groundwater Modellers who provide competencies in:
Knowledge of hydrogeology and groundwater modelling (conceptual and numerical) and related aspects.
All aspects of the groundwater modelling project stages, particularly the development and operation of the recharge and groundwater models.
Data processing and model operation

2.4. Final Reporting

Final comprehensive reporting must factually describe the different steps that have been completed with documentation of all input and output result of the modelling undertaken, alongside discussions and interpretations of the findings and results.

2.5. Anticipated Programme

The Contract will be established for a period of 12 months. The Contract is intended to start in September 2021 or as otherwise agreed with the Agency. Works will be completed by the 30 September 2022.

2.6. Division of the Contract into Lots

This procurement requirement is not divided into Lots because it is deemed most appropriate for the work to be completed in its entirety by the successful bidder. A supplier may decide to work in partnership or subcontract elements of the project, but this must be clearly outlined in their tender submission and the contract will only be formed with the main contractor.

2.7. Performance Measures

Performance will be monitored throughout the project, during the required meetings outlined in the scope. Progress will be monitored, and regular communication will ensure the project remains on track to the programme developed in the tender period. Bidders are to provide a clear metric for performance measurement, which the Authority will be able to use to monitor quality and progress.

2.8. Pricing and Payment Strategy

The pricing strategy for this project will be fixed price. The payment model is fixed price per milestone, which is linked to the tasks completed, as costed in the pricing schedule. The dates of the payment milestones have been established in the tender process and through the programme of works submitted by the winning bidder. The pricing schedule comprises priced hourly inputs from named staff, to deliver each output. Payment will be made after submission and acceptance of the agreed outputs by the Environment Agency Project Manager.

2.9. Payment Milestones

There will be monthly project review virtual meetings and we expect the supplier to maintain and share with the EA Project Manager a project progress and spend forecast profile as well as an issues and risks catalogue throughout the project. The Agency will raise a purchase order to cover the cost of the services and will issue it to the awarded supplier following contract award.

Invoices should be raised on completion of key milestones. Before the invoice is issued, a fee note must be emailed in advance to the contract manager for approval. All invoices must quote the purchase order number in order to be processed. A file copy invoice must be provided to the contract manager, on request. The timescale for payment of invoices will be up to 30 days after we have received a valid invoice.

Pricing Schedule

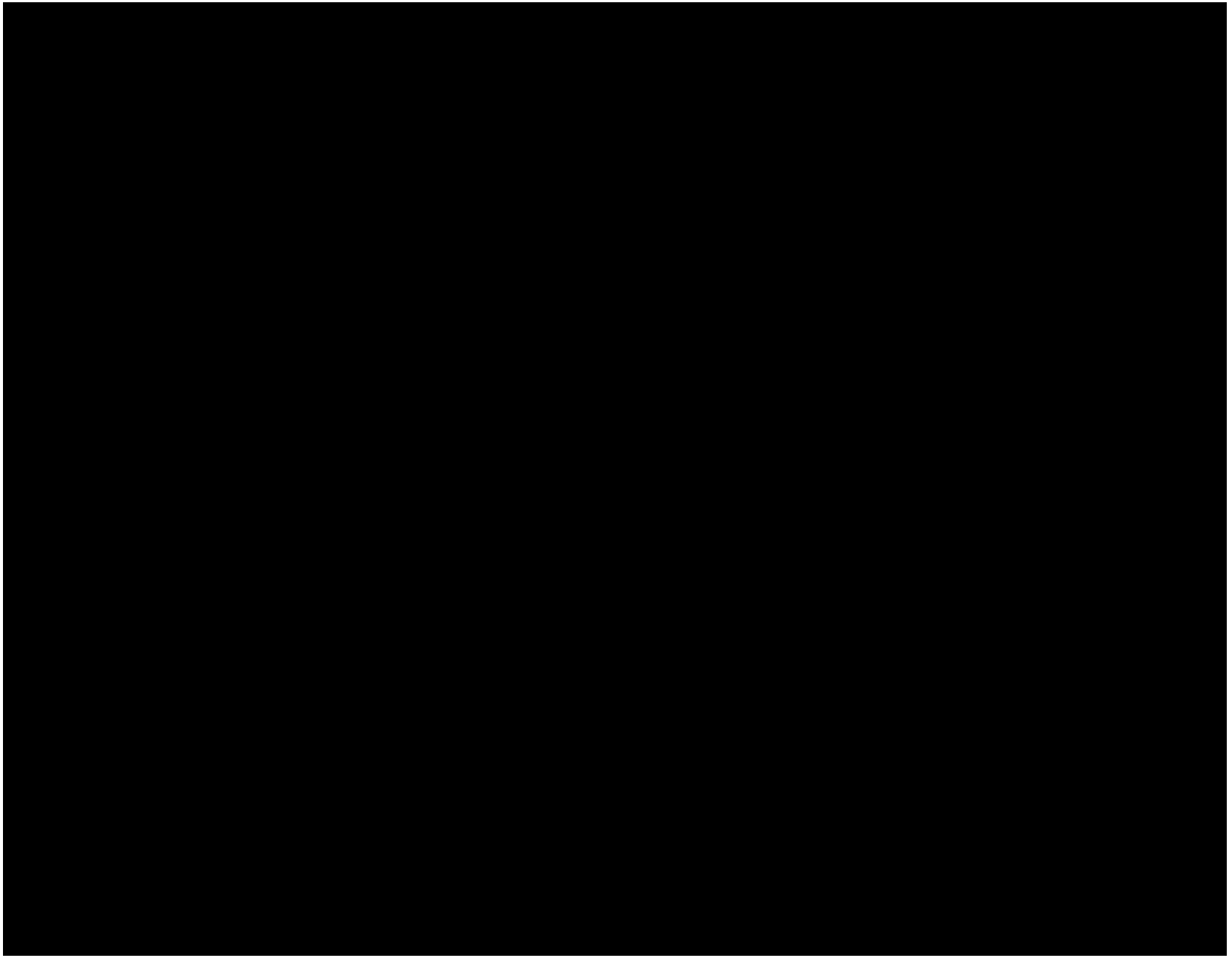
The Price due to the Contractor in consideration for the provision of the Services is £90,937.36.

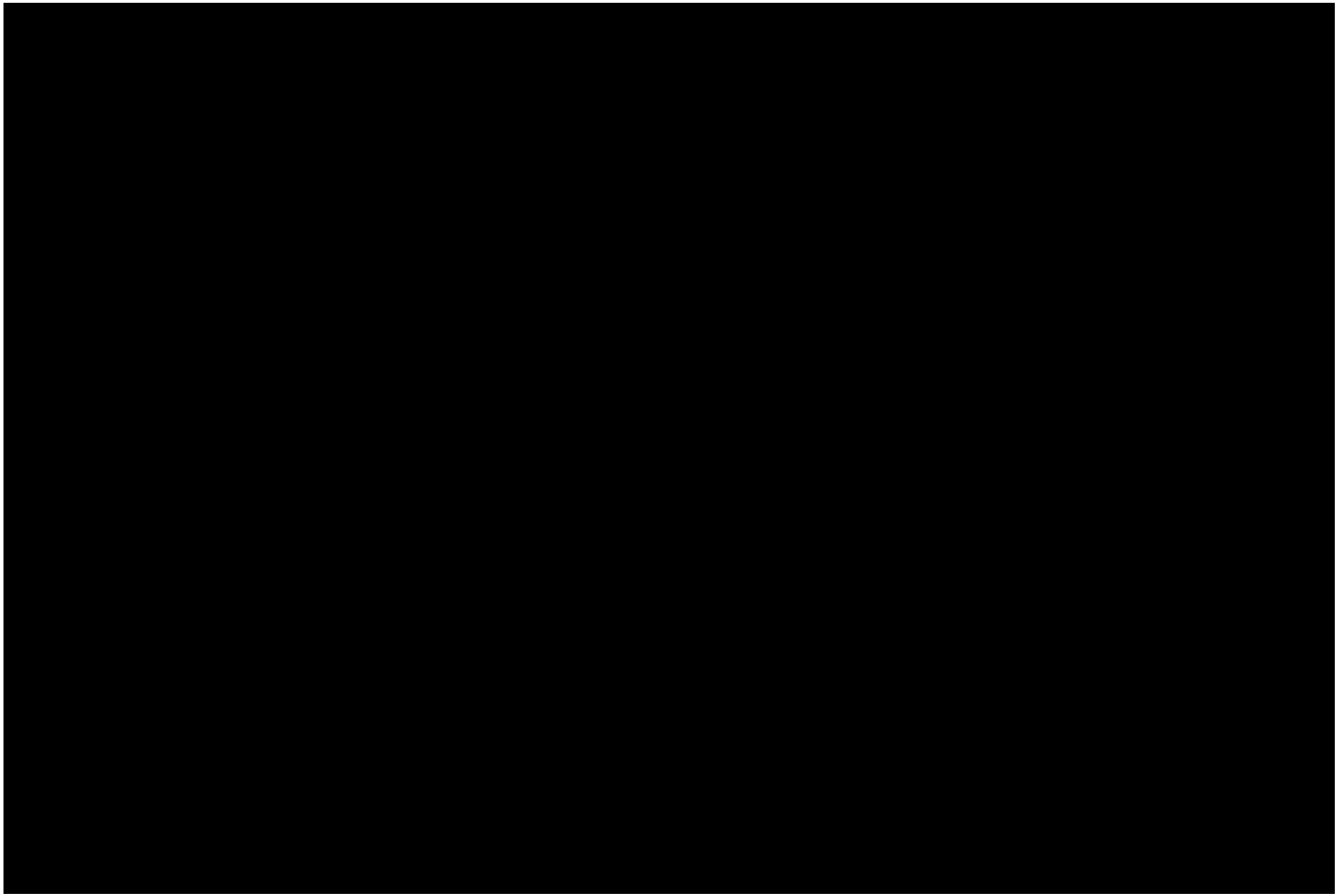
Payment will be made for delivery and acceptance of agreed milestones, as outlined in the table below:

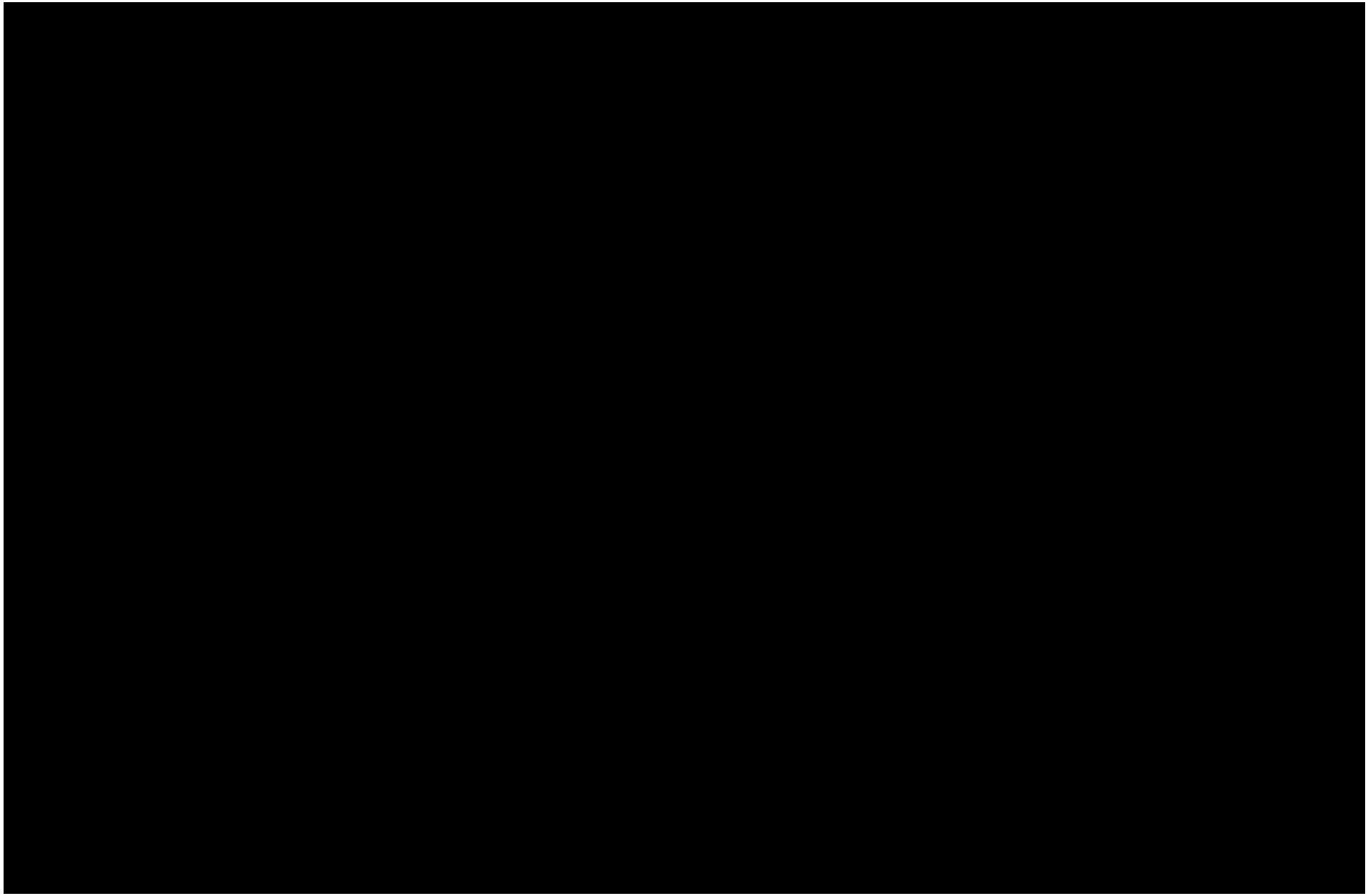
[redacted]				
[redacted]	[redacted]	[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted] = £6,968.50

[redacted]

[redacted]







CCN Template

Contract Change Note ("CCN")

CCN Number **Contract Reference Number & Title** **Variation Title** **Number of Pages**	01

WHEREAS the Contractor and the Authority entered into a contract for the (title of contract) dated (date) (the "Original Contract") and now wish to amend the Original Contract

IT IS AGREED as follows

1. The Original Contract shall be amended as set out in this Change Control Notice:

Change Requestor / Originator		
Summary of Change		
Reason for Change		
Revised Contract Price	Original Contract Value	
	Previous Contract Changes	
	Contract Change Note	
	New Contract Value	
Revised Payment Schedule	No change to costing schedule.	
Revised Specification	The specification will change from that drafted in the original contract to the text drafted in the summary section above.	
Revised Contract Period		
Change in Contract Manager(s)	N/A no change to contract manager	
Other Changes	N/A no other changes	

2. Save as amended all other terms of the Original Contract shall remain effective.

3. This CCN takes effect from the date on which both Parties communicate acceptance of its terms via Bravo.

Authorised Authority Representative

Name……

Date ……..

Defra Commercial Officer
(FSOD Sign off up to £500k)

Name ……

Date……

Authorised Contractor Representative

Name……

Date……

Data Protection Schedule

Definitions – the definitions in this Schedule and the Contract shall apply:

Annex 1: the Schedule of Processing, Personal Data and Data Subjects attached to this Data Protection Schedule.

Annex 2: Joint Controller Agreement (where required).

Party: a Party to this Contract.

Data Protection Impact Assessment: an assessment by the Controller of the impact of the envisaged processing on the protection of Personal Data.

Controller, Processor, Data Subject, Personal Data, Personal Data Breach, Data Protection Officer: takes the meaning given in the GDPR.

Data Loss Event: any event that results, or may result, in unauthorised access to Personal Data held by the Processor under this Contract, and/or actual or potential loss and/or destruction of Personal Data in breach of this Contract, including any Personal Data Breach.

Data Subject Request: a request made by, or on behalf of, a Data Subject in accordance with rights granted pursuant to the Data Protection Legislation to access their Personal Data.

Joint Controllers: where two or more Controllers jointly determine the purposes and means of processing. **Protective Measures**: appropriate technical and organisational measures which may include: the use of pseudonyms and encrypting Personal Data, ensuring confidentiality, integrity, availability and resilience of systems and services, ensuring that availability of and access to Personal Data can be restored in a timely manner after an incident, and regularly assessing and evaluating the effectiveness of the such measures adopted by it including those outlined in Annex 1 (Security).

Sub-processor: any third Party appointed to process Personal Data on behalf of the Processor related to this Contract.

1. DATA PROTECTION

1.1 The Parties acknowledge that for the purposes of the Data Protection Legislation, the Agency is the Controller and the Contractor is the Processor unless otherwise specified in Annex 1. The only processing that the Processor is authorised to do is listed in Annex 1 by the Controller and may not be determined by the Processor.

1.2 The Processor shall notify the Controller immediately if it considers that any of the Controller's instructions infringe the Data Protection Legislation.

1.3 The Processor shall provide all reasonable assistance to the Controller in the preparation of any Data Protection Impact Assessment prior to commencing any processing. Such assistance may, at the discretion of the Controller, include:

(a) a systematic description of the envisaged processing operations and the purpose of the processing;

(b) an assessment of the necessity and proportionality of the processing operations in relation to the Services;

(c) an assessment of the risks to the rights and freedoms of Data Subjects; and

(d) the measures envisaged to address the risks, including safeguards, security measures and mechanisms to ensure the protection of Personal Data.

1.4 The Processor shall, in relation to any Personal Data processed in connection with its obligations under this Contract:

(a) process that Personal Data only in accordance with Annex 1, unless the Processor is required to do otherwise by Law. If it is so required the Processor shall promptly notify the Controller before processing the Personal Data unless prohibited by Law;

(b) ensure that it has in place Protective Measures, which are appropriate to protect against a Data Loss Event, which the Controller may reasonably reject (but failure to reject shall not amount to approval by the Controller of the adequacy of the Protective Measures), having taken account of the:
(i) nature of the data to be protected;
(ii) harm that might result from a Data Loss Event;
(iii) state of technological development; and
(iv) cost of implementing any measures;

(c) ensure that :

(i) the Contractor Personnel do not process Personal Data except in accordance with this Contract (and in particular Annex 1);

(ii) it takes all reasonable steps to ensure the reliability and integrity of any Contractor Personnel who have access to the Personal Data and ensure that they:

(A) are aware of and comply with the Processor's duties under this clause;

(B) are subject to appropriate confidentiality undertakings with the Processor or any Sub-processor;

(C) are informed of the confidential nature of the Personal Data and do not publish, disclose or divulge any of the Personal Data to any third Party unless directed in writing to do so by the Controller or as otherwise permitted by this Contract; and

(D) have undergone adequate training in the use, care, protection and handling of Personal Data; and

(d) not transfer Personal Data outside of the EU unless the prior written consent of the Controller has been obtained and the following conditions are fulfilled:

(i) the Controller or the Processor has provided appropriate safeguards in relation to the transfer (whether in accordance with GDPR Article 46 or LED Article 37) as determined by the Controller;

(ii) the Data Subject has enforceable rights and effective legal remedies;

(iii) the Processor complies with its obligations under the Data Protection Legislation by providing an adequate level of protection to any Personal Data that is transferred (or, if it is not so bound, uses its best endeavours to assist the Controller in meeting its obligations); and

(iv) the Processor complies with any reasonable instructions notified to it in advance by the Controller with respect to the processing of the Personal Data;

(e) at the written direction of the Controller, delete or return Personal Data (and any copies of it) to the Controller on termination of the Contract unless the Processor is required by Law to retain the Personal Data.

1.5 Subject to clause 1.6, the Processor shall notify the Controller immediately if it:

(a) receives a Data Subject Request (or purported Data Subject Request);

(b) receives a request to rectify, block or erase any Personal Data;

(c) receives any other request, complaint or communication relating to either Party's obligations under the Data Protection Legislation;

(d) receives any communication from the Information Commissioner or any other regulatory authority in connection with Personal Data processed under this Contract;

(e) receives a request from any third Party for disclosure of Personal Data where compliance with such request is required or purported to be required by Law; or

(f) becomes aware of a Data Loss Event.

1.6 The Processor's obligation to notify under clause 1.5 shall include the provision of further information to the Controller in phases, as details become available.

1.7 Taking into account the nature of the processing, the Processor shall provide the Controller with full assistance in relation to either Party's obligations under Data Protection Legislation and any complaint, communication or request made under clause 1.5 (and insofar as possible within the timescales reasonably required by the Controller) including by promptly providing:

(a) the Controller with full details and copies of the complaint, communication or request;

(b) such assistance as is reasonably requested by the Controller to enable the Controller to comply with a Data Subject Request within the relevant timescales set out in the Data Protection Legislation;

(c) the Controller, at its request, with any Personal Data it holds in relation to a Data Subject;

(d) assistance as requested by the Controller following any Data Loss Event;

(e) assistance as requested by the Controller with respect to any request from the Information Commissioner's Office, or any consultation by the Controller with the Information Commissioner's Office.

1.8 The Processor shall maintain complete and accurate records and information to demonstrate its compliance with this clause. This requirement does not apply where the Processor employs fewer than 250 staff, unless:

(a) the Controller determines that the processing is not occasional;

(b) the Controller determines the processing includes special categories of data as referred to in Article 9(1) of the GDPR or Personal Data relating to criminal convictions and offences referred to in Article 10 of the GDPR; or

(c) the Controller determines that the processing is likely to result in a risk to the rights and freedoms of Data Subjects.

1.9 The Processor shall allow for audits of its Data Processing activity by the Controller or the Controller's designated auditor.

1.10 Each Party shall designate its own data protection officer if required by the Data Protection Legislation.

1.11 Before allowing any Sub-processor to process any Personal Data related to this Contract, the Processor must:

(a) notify the Controller in writing of the intended Sub-processor and processing;

(b) obtain the written consent of the Controller;

(c) enter into a written agreement with the Sub-processor which gives effect to the terms set out in this Schedule such that they apply to the Sub-processor; and

(d) provide the Controller with such information regarding the Sub-processor as the Controller may reasonably require.

1.12 The Processor shall remain fully liable for all acts or omissions of any of its Sub-processors.

1.13 The Controller may, at any time on not less than 30 Working Days' notice, revise this clause by replacing it with any applicable controller to processor standard clauses or similar terms forming part of an applicable certification scheme (which shall apply when incorporated by attachment to this Contract).

1.14 The Parties agree to take account of any guidance issued by the Information Commissioner's Office. The Controller may on not less than 30 Working Days' notice to the Processor amend this Contract to ensure that it complies with any guidance issued by the Information Commissioner's Office.

1.15 Where the Parties include two or more Joint Controllers as identified in Annex 1 in accordance with GDPR Article 26, those Parties shall enter into a Joint Controller Agreement based on the terms outlined in Annex 2 in replacement of Clauses 1.1-1.14 for the Personal Data under Joint Control.

Annex 1 - Schedule of Processing, Personal Data and Data Subjects Processing, Personal Data and Data Subjects

This Schedule shall be completed by the Controller, who may take account of the view of the Processor, however the final decision as to the content of this Schedule shall be with the Controller at its absolute discretion.

1. The contact details of the Controller's Data Protection Officer are:

Data Protection Officer

[redacted]

2. The contact details of the Processor's Data Protection Officer are:

[redacted]

3. The Processor shall comply with any further written instructions with respect to processing by the Controller.

4. Any such further instructions shall be incorporated into this Annex 1.

Description	Details
Identity of the Controller and Processor	The Parties acknowledge that for the purposes of the Data Protection Legislation, the Agency is the Controller and the Contractor is the Processor in accordance with Clause 1.1.
Subject matter of the processing	We share abstraction licensing data for processing, but we usually would screen out the personal information prior to sharing the data
Duration of the processing	The period is from 01/10/2021 to 01/10/2022
Nature and purposes of the processing	The sole purpose is to incorporate the data into the numerical groundwater model and we do not need any personal data for this to be achieved.
Type of Personal Data being Processed	*NIL*
Categories of Data Subject	*NIL*
Plan for return and destruction of the data once the processing is complete UNLESS requirement under union or member state law to preserve that type of data	N/A