The Production of Quick Scoping Reviews and Rapid Evidence Assessments

A How to Guide

Joint Water Evidence Group

December 2015

Alexandra Collins[1], Deborah Coughlin[2] James Miller[3] and Stuart Kirk[4]

Department for Environment Food & Rural Affairs

NERC SCIENCE OF THE ENVIRONMENT

Acknowledgements

The authors would like to acknowledge support and funding from the Natural Environment Research Council, the Department for Environment Food and Rural Affairs and the Environment Agency. This version builds on two earlier beta test documents, the first of which was additionally co-funded with the Centre for Ecology and Hydrology, and a project entitled 'Emerging Tools and Techniques to Deliver Timely and Cost Effective Evidence Reviews' conducted by The Centre for Evidence Based Conservation (University of Bangor) and funded by Defra. The authors would also like to thank all those who have contributed to the methodology, and are particularly grateful to Nicola Randall (Centre for Evidence Based Agriculture, Harper Adams University College) and Dave Stone (Natural England) for their comments and suggestions on an earlier draft and Neal Haddaway (Mistra EviEM) for useful discussions during development.

Contact details

[1]**Alexandra Collins**, Centre for Environmental Policy, Faculty of Natural Sciences, Imperial College London, South Kensington Campus, London, SW7 1NA, Alexandra.collins@imperial.ac.uk

[2]**Deborah Coughlin**, Department for Civil and Environmental Engineering, Imperial College London, South Kensington Campus, London, SW7 2AZ, Deborah.coughlin@imperial.ac.uk

[3]**James Miller** – Centre for Ecology and Hydrology, Maclean Building, Benson Lane, Crowmarsh Gifford, Wallingford, Oxfordshire. OX10 8BB, millj@ceh.ac.uk

[4]**Stuart Kirk,** Evidence Directorate, Environment Agency, 550 Streetsbrook Road, Solihull, West Midlands. B91 1QU stuart.kirk@environment-agency.gov.uk or WFRM Analysis and Evidence Team, Water & Flood Risk Management, Defra, Area 3D, Nobel House, 17 Smith Square, London. SW1P 3JR stuart.kirk@defra.gsi.gov.uk

Please cite as: Collins, A.M., Coughlin, D., Miller, J., Kirk, S. 2015. The Production of Quick Scoping Reviews and Rapid Evidence Assessments: A How to Guide

Foreword

The need for policy and practice that is informed by an objective and thorough review of the evidence base, together with the need to make the most of existing evidence is being increasingly recognised. However, this presents a number of challenges. For example: how can large volumes of information be best searched for and synthesised in a transparent and unbiased way? **Evidence Reviews (ER)**, in their various forms represent ways of searching for, reviewing and summarising evidence to help answer specific questions. There exists a spectrum of ERs that range in detail and rigour from **Literature Reviews** to **Systematic Reviews (SR)**.

This document contains a brief overview of the different ERs but is written primarily for those intending **to commission and/or produce** an ER in the form of **Quick Scoping Reviews (QSR)** or **Rapid Evidence Assessments (REA)**, that lie between literature reviews and SRs in terms of rigour of assessment. These have been found to be well suited to meet the evidence challenges most frequently faced by the authors in meeting policy and practice evidence requirements.

Whilst being less resource and time intensive compared to full SRs, QSRs and REAs are designed to be transparent and to minimise **bias**. QSRs and REAs can most readily be used to understand the impact either of a 'pressure' or a policy intervention. Additionally, a QSR can be applied to more open-ended questions such as 'what do we know about x or y?' Both forms of ER also provide an understanding of the volume and characteristics of evidence available on a certain topic and make it more accessible for further scrutiny if required. Hence, QSRs and REAs allow questions to be answered by maximising use of the existing evidence base, whilst also providing a clear picture of the adequacy of that evidence .

This document expands on high level Civil Service Guidance provided in the Magenta Book (HM Treasury, 2011) and Civil Service web-based guidance for conducting Rapid Evidence Assessments (UK Civil Service, 2013) along with experience gained by members of the Joint Water Evidence Group (JWEG). JWEG works to bring together 'land and water' evidence teams from across core Defra, the Environment Agency, Natural England and the Forestry Commission (England) and has conducted many ERs in support of its work.

This How to Guide provides a step-by-step approach to conducting QSRs and REAs (see Table 1 for an Evidence Review Checklist), emphasising the value of close working with the end-user who has commissioned the review, in order to meet research needs and so that findings are presented clearly and in context. The Guide also discusses how an Evidence Statement can optionally be produced as an output from an Evidence Review.

Examples of completed QSRs and REAs can be found at https://connect.innovateuk.org/web/jweg **or via the Defra website** http://randd.defra.gov.uk.

Finally, where we continue to work with experts to develop innovative tools and techniques for efficient delivery of evidence reviews, outputs will be shared via: https://connect.innovateuk.org/web/jweg.

Table 1: Evidence Review Checklist

The checklist below contains the steps required for an Evidence Review and should be followed during the review process.

Who	Step	Page	✓
User	**1. Determine the question and identify the appropriate ER method** • Articulate the need for work • Select appropriate method	4	
	2. Establish Steering Group and confirm method • Establish a group containing the User and other policy/practice clients that will benefit from the outputs of the Review • Confirm the need for the work • Confirm the method chosen	7	
	3. Establish a Review Team • Procure a Review Team • Team must contain ER and technical experts • Team must demonstrate understanding of the policy and/or practice context	8	
	4. Hold an Inception Meeting • All members of Steering Group and Review Team must attend • Confirm the policy and/or practice context • Agree primary question • Establish timeline and milestones for ER process	9	
Review Team	**5. Develop a Protocol** • Complete Protocol template outlining details of the review and methodology to be used • Confirm Protocol with the User	14	
	6. Search for the evidence • Follow the search strategy identified in the Protocol • Regularly update the User on progress • Agree any necessary alterations to the Protocol with the User and record clearly • Record all search results in a database	19	
	7. Screen the search results • Apply criteria outlined in Protocol consistently • Record the results of each screening phase fully	21	
	8. Extract evidence that relates to ER question • Create a Systematic Map of the fully screened evidence	23	

Who	Step	Page	✓
	9. Critical appraisal of evidence (SR and REA only) • Evaluate relevancy of evidence to ER question • Evaluate robustness of evidence • Combine relevancy and robustness evaluations	25	
	10. Synthesise the results • Describe the volume and characteristics of the evidence base • Use the synthesised findings to answer the primary and secondary questions (if applicable) of the review • Highlight implication of the findings for policy and/or practice • Make recommendations for further research if relevant	29	
	11. Communicate ER findings • Produce final report following the final report template	33	
User	**12. Sign off project** • Ensure that the ER has provided a clear and sufficient response to the question(s) • Ensure that the quality of the ER is the highest possible given the scope of the review • Sign-off the project if content with the response and the quality • Discuss with the Steering Group the findings and identify if further work is required	36	

Document outline

Glossary

Term	Definition
Bias	A systematic error, or deviation from the truth, in results or inferences caused either intentionally or unintentionally
Boolean Operators	Simple words (AND, OR, NOT etc) used as conjunctions to combine or exclude keywords in a search, resulting in more focused and productive results
Conceptual Model	A description, ideally in the form of a systems diagram or schematic, of the interactions that the ER is testing or exploring
Evidence	Information that can be used to support decisions in developing, implementing and evaluating policy, operations and services
Evidence Review (ER)	An umbrella term that encompasses the types of review methodology available for reviewing evidence. In this document ER mostly relates to either a QSR or REA
Expert Elicitation	The synthesis of opinions of authorities of a subject where there is uncertainty due to insufficient data
Grey Literature	Informally or non-commercially published information that can be difficult to search for using conventional searching techniques
First Phase Screening/First Pass	The first phase of screening of the evidence found by the ER using only the title or headline of the evidence found

Term	Definition
Impact Question	A question that specifically aims to assess the impact either of a 'pressure' on a system (environmental or socio-economic) or the impact of a policy driven intervention – such as: 'Does this intervention have the desired outcome?'
Inception Meeting	The initial meeting held between the Steering Group and Review Team to refine the Conceptual Model and primary question of the ER
Lead Reviewer	The individual responsible for conducting the evidence search, screening, synthesising and where applicable the critical appraisal phases of the evidence review
Narrative Synthesis	An approach to the synthesis of findings from multiple studies that relies primarily on the use of words and text to summarise and explain the findings.
Non-Impact Question	A question that aims to address less quantifiable or defined effects – such as: 'What is known about?', 'How does it work?'
Peer-Reviewed Evidence	Evidence that has been reviewed by others knowledgeable in the field of inquiry, to determine whether the studies they describe are of reasonable quality and the conclusions reported are supported by the evidence.
PICO Elements	The Population, Impact, Comparator and Outcome elements that are often used to define a question
Primary Question	The question to be addressed by the review
Protocol	A written paper outlining the methodology the ER will follow

Term	Definition
Publication bias	the tendency for non-significant or controversial results to remain unpublished
Overall Assurer	The person responsible for ensuring the ER is completed to a high standard and that the Review Team's own QA processes are followed
	Information that does not contain numerical data
Quality Assurance	The systematic process of checking whether the final product meets requirements. There are two levels of QA in the ER process: (i) QA will be carried out by the Lead Reviewer before the draft Final Report is presented to the User and Steering Group; (ii) the Overall Assurer will ensure the review is fit for purpose
Quick Scoping Review (QSR)	A type of evidence review that aims to provide an informed conclusion on the volume and characteristics of an evidence base and a synthesis of what that evidence indicates in relation to a question.
Rapid Evidence Assessment (REA)	REAs is a type of evidence review that aims to provide; an informed conclusion on the volume and characteristics of an evidence base, a synthesis of what that evidence indicates and a critical appraisal of that evidence.
Review Team	The group of people undertaking the evidence review
Screening	A process where the results of the evidence searches are reviewed to provide a more relevant evidence base for the synthesis stage. This is typically done using a two phase approach
Search Strings	Groups of keywords used for systematically

Term	Definition
	searching for evidence within selected databases
Secondary Question(s)	Questions that contribute to building up the evidence surrounding the primary question. They may be sub-components of a primary impact question or non-impact questions surrounding the topic under review
Steering Group	A group of individuals interested in the outputs of the evidence review who support the User by helping to define the question to be addressed, identifying who will carry out the review and guide the review process
Second Phase Screening/Second Pass	Screening phase that involves reading the abstract or first paragraph of the evidence that has passed the first screening phase in order to identify evidence that will be used further in the evidence extraction and synthesis stages of the ER
Systematic Map	A searchable database of evidence meeting the screening criteria organised by criteria relating to the primary and secondary questions, keywords and other aspects of interest to the review
Systematic Review (SR)	A review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and analyse data from the studies that are included within the review. Statistical methods (meta-analysis) may be used to analyse and summarise the results of the included studies
Theory of Change	A description of how and why a change is expected to happen in a particular context

Term	Definition
Unpublished Evidence	Information that has been produced but has not been published either formally or informally. This can help to mitigate publication bias
User	The individual or individuals who have identified the need for the work and have commissioned the work. They are supported by the Steering Group in order to ensure the review meets requirements

Roles and Responsibilities

The roles outlined here are largely derived from Defra guidance on roles and responsibilities, as set out in the Civil Service Aqua book (HM Treasury, 2015) Setting clear roles and responsibilities for the delivery of the ER will help to ensure that the review is completely efficiently and to an acceptable quality standard.

The User is the individual(s) who has identified the need for the work and is the customer for the decision that the evidence is helping to inform. Supported by the Steering Group (and in Defra, the evidence teams), the User commissions the work and ensures the review meets requirements. The User is responsible for the initial steps of the ER and for signing-off the project once completed. The User will ensure that:

- The work has not been done by others, and should review previous work that may be helpful
- The **quality assurance** process used is compliant and appropriate
- Sufficient time and resources are allowed for appropriate assurance
- Risks, limitations and major assumptions are understood by all users of the evidence
- The use of the evidence is appropriate, and the implications for the decision-making process are recognised if using evidence of limited quality
- A work specification is agreed, and the completed final project, is signed off

The Steering Group will consist of the User and other key policy and practice clients who will benefit from the outputs of the ER. The Steering Group should also include an individual with experience of conducting ERs. This person will act as an **Overall Assurer**, providing assurance to the User that the review follows the correct ER process, as outlined in this document, to encourage the highest possible standards of quality. Within Defra this person is likely to be an evidence specialist.

The Steering Group will:

- Confirm the need for the work
- Confirm the ER method chosen
- Work with the User (and other colleagues as necessary) to establish a **Review Team** to undertake the ER

- Provide assistance, support and technical input to the User and the Review Team throughout the ER process in order to ensure the outputs meet the User's needs
- Typically consist of 5 people

The Overall Assurer: is responsible for ensuring the ER is completed to a high standard and that the Review Team's own QA processes are followed. The Overall Assurer will need to:

- Review the method used to conduct the ER
- Ensure that the review team's QA process is fit for purpose and is followed
- Ensure that the review is conducted in line with all ER principles

Once a Review Team has been established (after Step 3) the Lead Reviewer will join the Steering Group to provide a point of contact between the two groups.

The Lead Reviewer is responsible for delivering the ER including the commissioning and conduct of work from sub-contractors, where appropriate. The Lead Reviewer will:

- Work closely with the User and the Steering Group to agree the scope of the question
- Develop an appropriate timeline, a Protocol for the work including a Quality Assurance plan, and agree these with the User
- Provide regular progress updates to the User and Overall Assurer, to ensure that work remains within scope and relevant
- Deliver the draft and final outputs.
- Clearly document the assumptions and approach used

Introduction to Evidence Reviews

There is an increasingly recognised need for policy and practice decisions to be informed through a systematic and objective review of **evidence**. This helps to ensure the creation of well-designed, effective and efficient policies and interventions. However, it is commonly acknowledged that despite significant research investment there is sometimes a lack of consideration of what the available evidence on a topic presents, when considered collectively and objectively. Such a lack of consideration may result in poor use of evidence in policy and practice and in poorly informed pieces of research undertaken on topics that may already have been researched.

United Kingdom Civil Service Guidance has identified a number of methods for reviewing evidence. The varying levels of ERs are illustrated in Figure 1. The levels illustrated represent increasing effort, detail and ability to provide a thorough and systematic assessment of the evidence. Whilst these can be built upon, each level of review can also be carried out independently.

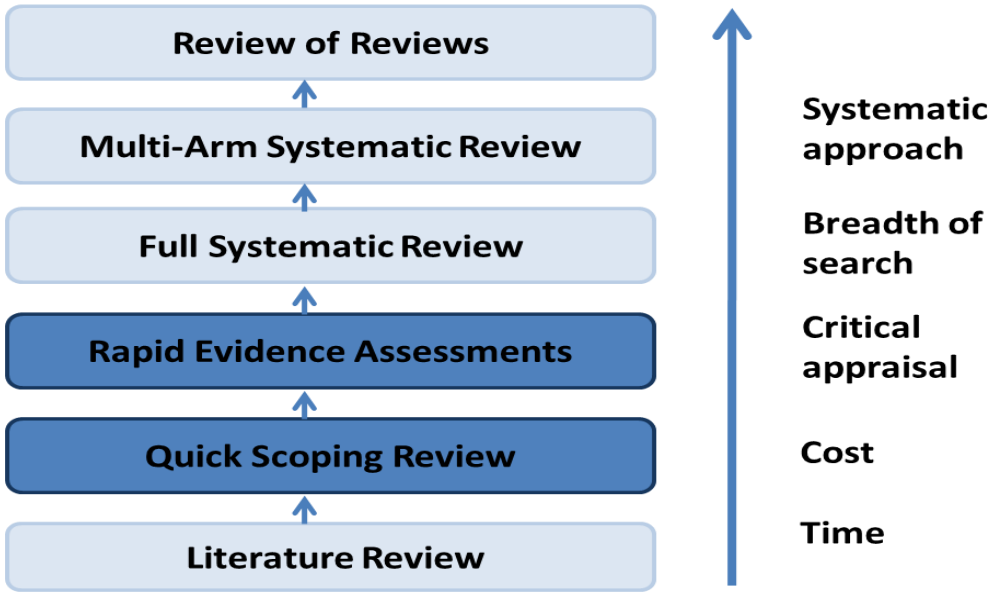

Figure 1: The position of Quick Scoping Reviews and Rapid Evidence Assessments in the hierarchy of evidence reviews, adapted from the Civil Service Guidance on Rapid Evidence Assessments

Literature reviews have been the traditional response to providing an overview on a subject and are useful for simple fact-finding tasks. However, by basing reviews on

selected sources, literature reviews can be liable to bias, represent subjective views, and often lack transparency. This has led to increased interest in the use of more systematic approaches to assessing evidence such as SRs. Whilst SRs provide comprehensive searches of evidence and in-depth critical appraisal of the evidence found, the time and costs of SRs often make them unsuitable for the needs of Government departments and associated agencies, such as Defra. Defra is often required to provide rapid, and less costly, assessments of evidence in order to answer specific questions. Additionally, a SR may be disproportionate for a relatively 'low risk' topic or area of enquiry. Furthermore, the amount or type of evidence available may make a SR unsuitable, though a transparent and unbiased approach is still required.

The selection of QSRs and REAs were found by the authors of this guide to meet the majority of evidence needs of the JWEG. **Examples of QSRs and REAs are available from the JWEG community site** https://connect.innovateuk.org/web/jweg.

Both QSRs and REAs seek to provide a 'balanced assessment' of what is known about a topic related to a policy or practice issue, by using systematic searching methods developed for SRs, but limiting the rigour of their application to reduce the time and expense of production. Whilst QSRs and REAs should be as systematic and thorough as possible, the reduced scope and resource constraints mean that they may not be as robust as SRs.

Key Principle: Aims of QSRs and REAs

A QSR aims to provide an informed conclusion on the volume and characteristics of an evidence base and a synthesis of what that evidence indicates in relation to a question. A REA aims to provide an informed conclusion on the volume and characteristics of an evidence base together with a synthesis of what that evidence indicates following a critical appraisal of that evidence.

This How to Guide to the Production of QSRs and REAs, expands upon the high-level descriptions available via the Civil Service web-based guidance and builds on earlier versions along with the authors' experience of undertaking ERs for policy and practice needs. The approach draws upon guidance produced by expert Systematic

Review groups such as the Collaboration for Environmental Evidence (CEE), Evidence for Policy and Practice Information (EPPI), and the Campbell Collaboration. It builds on two earlier beta versions and a Defra funded project, WT1552, 'Emerging Tools and Techniques to Deliver Timely and Cost Effective Evidence Reviews'.

USER LED

1 Determine the Question and Identify the Appropriate Evidence Review Method

Tasks	✓
Articulate the need for work	
Select appropriate method	

The User who has identified the need for the project, with the support of the Steering Group (and, where appropriate, evidence specialists), must establish the policy and practice context and confirm the work has not been previously undertaken. A draft question will be formulated, which will be reviewed by the Steering Group and Review Team later in the ER process. The User must then select the most appropriate review method, taking a risk-based approach, as outlined in Figure 2.

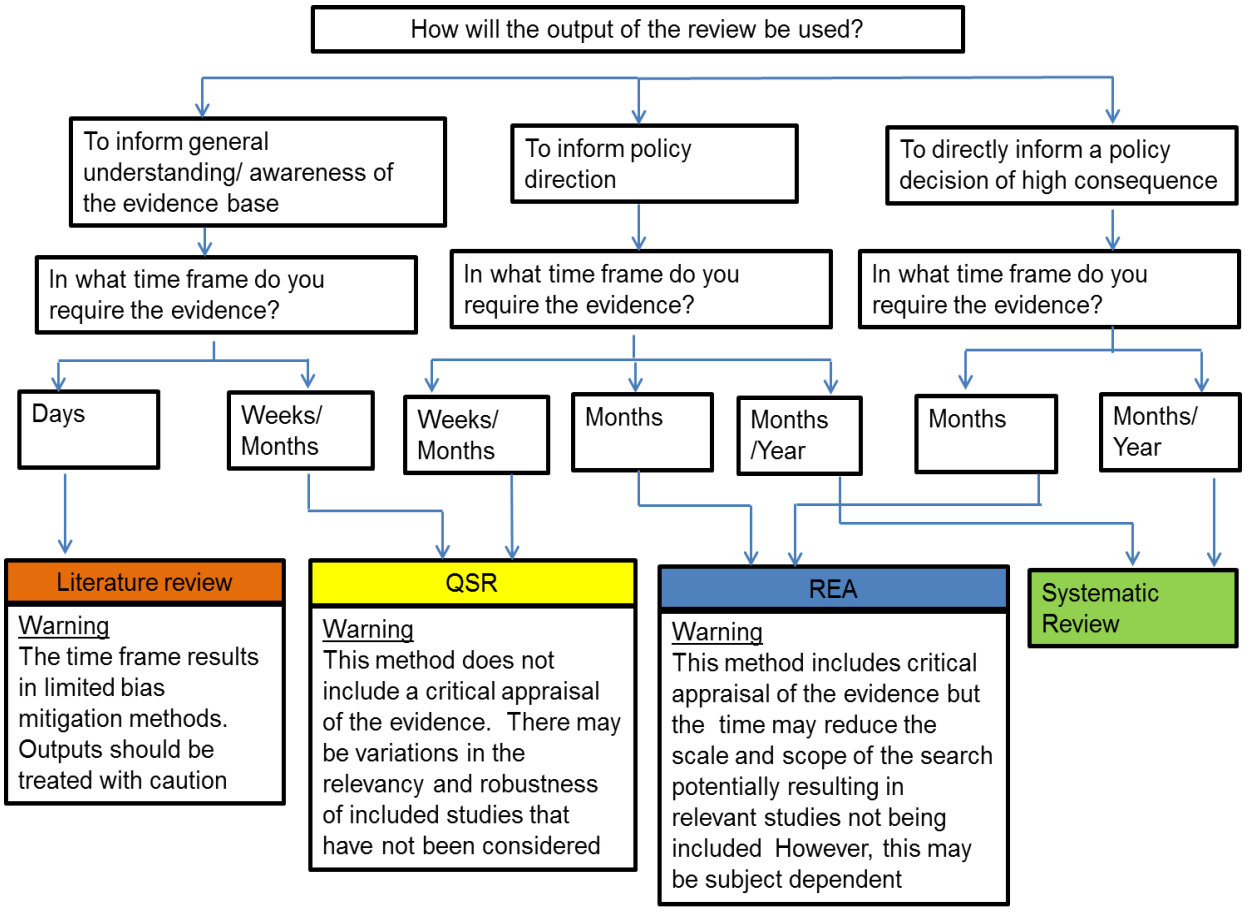

Figure 2: Flowchart to help decide which review method is most suitable for the project

As there are variations in what different ER methods provide it is essential that the method selected is appropriate for what the outputs of the review will be used for. As QSRs do not appraise the quality of the evidence found they should only be used to provide general understanding of the evidence base and to inform general policy direction. If the outputs from the review are to be used to directly inform a decision then a REA or SR should be used for a critical appraisal of the relevancy and robustness of the evidence base. For more information on the distinctions between the review methods please see Defra project WT1552 via http://randd.defra.gov.uk.

The main attributes of different ER types are shown in Table 2.

Table 2: Main attributes of different types of ER

Attributes	Literature Review	QSR	REA	SR
Time duration*	1-2 weeks	3-5 months	5-8 months	10-18 months
Used to	Inform on a specific topic	Identify evidence available on a topic and summarise	Identify evidence available on a topic, summarise and provide a critical assessment of the evidence	Comprehensive review and assessment of evidence available on a topic
Search published data	✓	✓✓	✓✓	✓✓✓
Search additional sources of information		✓	✓✓	✓✓✓
Systematic map of evidence		✓	✓	✓✓✓
Informed conclusion upon completion	Maybe	✓	✓✓	✓✓✓
Critical assessment of evidence			✓	✓✓✓
Input from external experts	Maybe	Maybe	✓	✓✓✓
Estimated cost	<5,000	10-30,000	20-50,000	80-120,000

*Typical completion time after contract has been established and the project has commenced

1.1 Upgradability of ERs

QSRs, REAs and SRs attempt to increase transparency and address biases inherent in the review process. The choice of method will depend on several factors including: resources available and level of risk associated with the project. However, it is possible to subsequently upgrade from a QSR to a REA and/or SR and from REA to SR. Note, as a typically SR requires more independence in terms of external peer-review and includes more exhaustive searches, upgradability to a SR will depend on the exact criteria used to conduct the initial QSR or REA. For further details please refer to CEE's SR Guidance (CEE, 2013) and Defra project WT1552 via http://randd.defra.gov.uk.

2 Establishing a Steering Group

Tasks	✓
Establish a group containing the User and other policy/practice clients that will benefit from the outputs of the Review	
Confirm the need for the work	
Confirm the method chosen	

The User must oversee the establishment of a Steering Group. The Steering Group will consist of the User and other key policy and practice clients who will benefit from the outputs of the ER, along with an Overall Assurer who is likely to be an evidence specialist and have experience of conducting ERs.

Once a Review Team has been established (Step 3) the Lead Reviewer will join the Steering Group in order to provide a point of contact between the two groups.

3 Establish a Review Team

Tasks	✓
Procure a Review Team	
Team must contain ER and Technical experts	
Team must demonstrate understanding of the policy and/or practice context	

Once the Steering Group has confirmed the type of review, it will need to identify and obtain the services of a Review Team, who will undertake the ER and produce the final report. In the case of Defra, the appropriate Evidence Programme Manager will assist with tendering and commissioning of the Review Team, if this is necessary.

The Review Team should appoint a **Lead Reviewer** who will lead the process and also take a position on the Steering Group. As this is a key role in delivering the ER the Lead Reviewer must have **experience in systematically reviewing evidence**. The Review Team should also include individual(s) who have good technical knowledge of the topic to be addressed by the ER. It is particularly important that the Review Team is familiar with the context and practical issues surrounding the subject. This will be important to facilitate dialogue with the Steering Group during the Inception Meeting (page 9) and later during the searching, interpretation and communication of the evidence. The Review Team must have access to the relevant electronic databases, as only certain organisations will have particular subscriptions and access to journal articles; outside of these organisations access to the evidence needed will become expensive.

Key Principle: Review Team

The Review Team will undertake the ER and should consist of an individual with experience of undertaking systematic searches and reviews of evidence, the Lead Reviewer, along with those that are familiar with the policy and practice context and have technical expertise relevant to the question in order to allow more in-depth interpretation of the ER findings

4 Hold an Inception Meeting

Tasks	✓
All members of Steering Group and Review Team must attend	
Confirm the policy and/or practice context	
Agree primary question	
Establish timeline and milestones for ER process	

Once the Review Team has been established an **Inception Meeting** must be arranged and attended by all members of the Steering Group and the Review Team.

The Inception Meeting should confirm the policy and/or practice context for the work so that all involved in the ER can fully understand the aims of the review and to ensure the ER will provide relevant outputs for the User. A checklist for an Inception Meeting is provided in Appendix 15.1 (page 39).

Co-development of a **Theory of Change** with the Steering Group and Review Team at the Inception Meeting is required to describe how and why the change investigated by the review is expected to happen. **Conceptual Models** that present this as a systems diagram or a schematic (example provided in Figure 3) can be particularly useful in enabling communication and making explicit the assumptions and assumed mechanisms associated with the review.

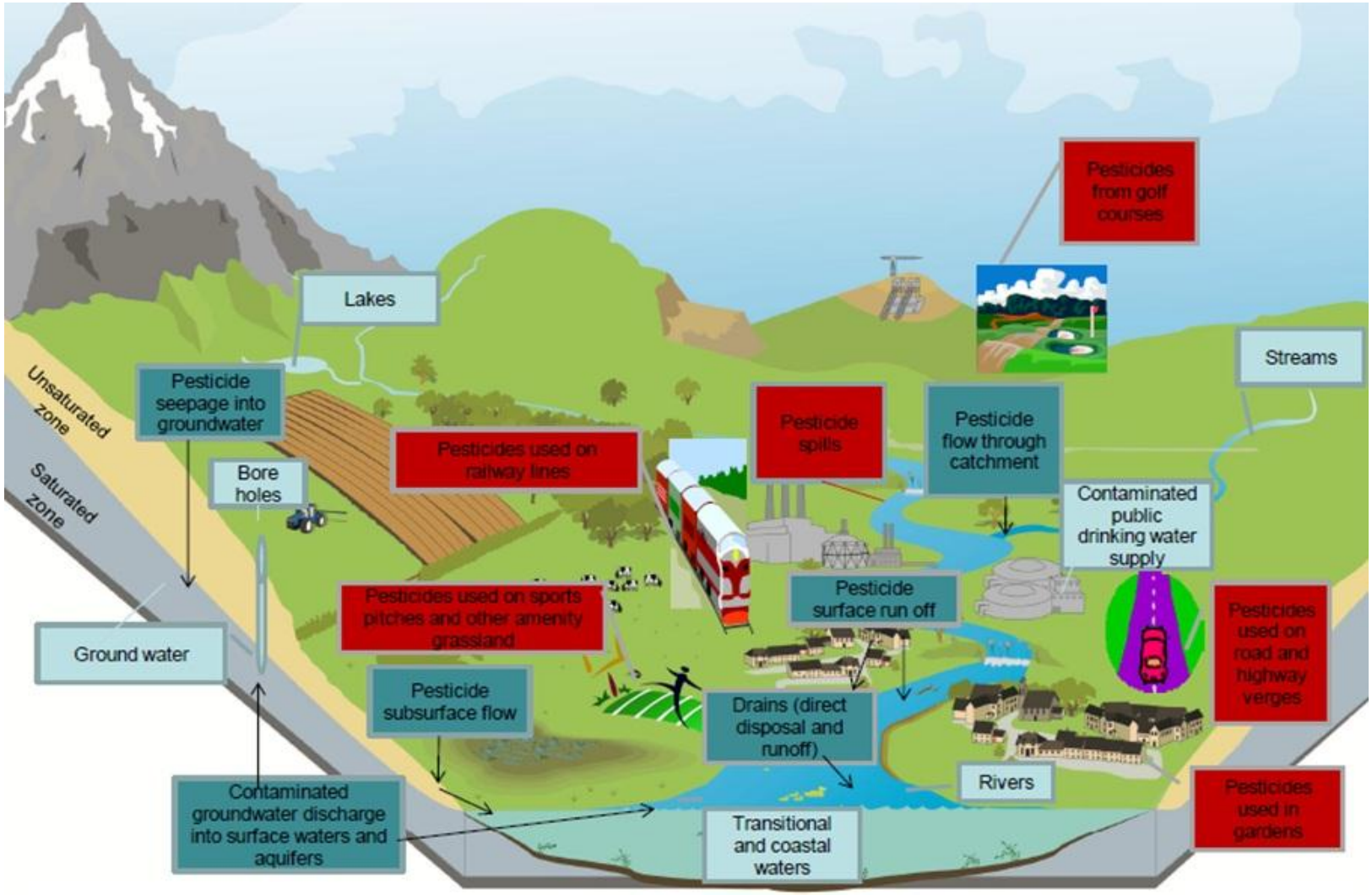

Figure 3: A conceptual model of the water pollution caused by amenity pesticides, highlighting the sources (red), pathways (green) and receptors (blue) (taken from James et al., 2014 (Defra project WT1546)).

Key Principle: Conceptual Models
A Conceptual Model describes the interactions that the ER is testing. Where possible this should be provided as a systems diagram or schematic. The development of a conceptual model is essential in order to make explicit the interactions that the ER will explore and those it will not.

4.1 Setting the Primary and Secondary Questions

Through a discussion of the policy context and the conceptual model, the specific, **primary question** of the ER and any related **secondary questions** will be agreed.

The primary question of the ER may be an **impact question**, i.e. a question assessing positive and negative impacts of a particular intervention or environmental pressure, or a **non-impact question**, e.g. 'What is the evidence surrounding x?' or 'What do we know about x?' Questions of a non-impact nature are more typical of a QSR, while the primary question for a REA is more commonly an impact question e.g. 'What is the scale of the impact from x activity on the environment?' or 'How effective is intervention x at improving the condition of the environment?' Due to the critical appraisal element, REAs are particularly well suited to assessing the impact of a pressure or policy intervention. However, a REA can also take the form of a non-impact question if required.

Answering the primary question set in the Inception Meeting will be the fundamental aim for both a QSR and REA. The primary question should ideally be a closed question often containing the relevant Population, Intervention, Control, Outcome (**PICO**) elements. Identifying the PICO elements will help to ensure that the question is clear and focused. However, for non-impact questions not all elements such as intervention and comparator will be applicable to the ER. An example question and its identified PICO elements are provided in Table 3.

Table 3: Example PICO elements for a QSR taken from James et al., 2014 (Defra project WT1546).

Question	What is the impact of amenity pesticides on controlled waters
Population The subject or unit of study	Controlled waters
Intervention/Exposure The proposed management regime, policy or related intervention/ exposure applied or investigated	Exposure; pesticides used for amenity purposes (e.g. recreation)
Comparator The control with no intervention or an alternative to the intervention	Absence of amenity pesticide, non-amenity pesticides
Outcome The effects of the intervention	Impact; water quality, WFD environmental standards, human health, ecology, biology, ecotoxicology, invertebrates, fish, costs

Secondary questions can also be investigated by the ER, these are typically more 'open', non-impact questions. They may also reflect the diverse issues surrounding the primary question, for example concerns and aspirations of stakeholders related to the assessment of the effectiveness of a policy driven intervention. The potential list of secondary questions should be carefully considered so that the analysis is realistic for the scope of the review (only 1 or 2 secondary questions should be used), ensuring the focus of the review is the primary question. Where secondary questions are investigated it should be noted that the main focus of the ER will be the primary question, secondary questions will only be addressed once the initial search for the primary question has been conducted. If any information relevant to the secondary question is found during the evidence search and screening process it should be recorded when data extraction takes place (see Step 8).

Agreeing the primary question and, if appropriate, secondary questions may require significant time and discussion but is essential to ensure the ER is fit-for-purpose and represents time well spent.

Key Principle: Establishing the primary question
The primary question to be addressed by either a QSR or a REA should, where possible, be a well-defined question. This will be the main focus for the review and answering it will be the primary objective. Secondary questions can be used. However, they should be restricted to one or two key questions.

By the end of the Inception Meeting the Review Team should have all the information they require to develop a draft **Protocol** (a written structured methodology paper, see Step 5 and Appendix 15.2) for the ER. A submission date for the draft Protocol will be agreed by the User and led by the Review Team.

Review Team Led

It is the responsibility of the Review Team to conduct the searching and synthesis stages of the ER. There should be frequent contact between the Review Team and the User to ensure progress is reported and that the Steering Group are consulted on each stage. This contact can take the form of quick 'catch up' conference calls or meetings as required.

5 Develop a Protocol

Tasks	✓
Complete Protocol template (Appendix 15.2) outlining details of the review and methodology to be used	
Confirm Protocol with the User	

Developing a Protocol sets QSRs, REAs and SRs apart from less structured reviews. Pre-determining the methodology that will be used by the review ensures robustness and transparency. It also helps communication between the User, Steering Group and Review Team, setting out clearly how the review will be conducted. Whilst the development of the review Protocol is the responsibility of the Review Team the User and the Steering Group are required to provide input and to approve the Protocol that is followed for the review.

Key Principle: The ER Protocol
Developing a search strategy and formally detailing this in the Protocol document will help to ensure that the ER process is rigorous and transparent

5.1 Protocol Template

The Protocol will outline the background to the ER and provide a transparent guide to how the ER will be carried out.

The Protocol should explicitly state the following elements:

- Authors – Team members and report authors
- Background – Outlining the rationale behind the ER including the policy context
- Objective – Clarify the primary question and secondary questions if used, detailing the PICO (Population, Intervention, Comparator, and Outcome) elements
- Scope – Provide clear limits to the question elements such as geographic range, topic, language, and time period
- Conceptual Model – A conceptual model of the interactions that are the focus of the ER.
- Methods - Outline of how the following search, extraction and synthesis steps are to be carried out, including:
- Search keywords
- A strategy for where evidence will be searched for, covering peer-reviewed, grey literature and unpublished evidence
- Outline inclusion and exclusion criteria (see Step 7)
- Strategy for extracting information (see Step 8)
- Strategy for critical appraisal, if a REA is being carried out, detailing how will evidence be assessed for relevancy and robustness (see Step 9)
- Indication of how information will be synthesised
- Outline of conflicts of interest and sources of support to ensure transparency
- References and sources of information used in the Protocol
- A timeline for the work

A template for the Protocol is provided in Appendix 15.2 (page 40).

5.2 Developing the Search Strategy Included in the Protocol

In order to search for evidence in a systematic and transparent manner, keywords related to the question should be used. These keywords should be identified in consultation with the Steering Group during the Inception Meeting and can be identified from the primary question and the PICO elements of the question. The use of synonyms and antonyms of key words should also be explored. The development of keywords used by the ER will need to be an iterative process, therefore during the

Protocol development keywords and different search locations should be trialled and refined. Consultation with the User and Steering Group at this stage will help to ensure that the amount of evidence returned by the search is optimised for the scope of the ER and will provide an overview of the types and scale of evidence available for the review.

Key Principle: Keywords
Searching for evidence must be done in a systematic manner using clearly recorded keywords. This should be done to reduce bias within the searching phase

A strategy for where evidence will be searched for must also be established. This should consider databases of scientific literature for **peer-reviewed evidence**, relevant websites for **grey literature** and also any sources that can be used to gather **unpublished evidence**. It is important that the search strategy covers these three types of evidence in order to minimise **publication bias**. For intervention questions, grey literature and unpublished evidence may be particularly important. This is because it has been demonstrated that often there is a publication bias which results in studies that do not find effects or impacts being less likely to be published (Gough et al., 2013).

For peer-reviewed evidence, a review should search multiple databases, with two as a minimum. This practice accounts for the fact that different databases catalogue different ranges of time periods, journals and subject areas. Full records of the databases searched must be provided, including the individual databases included in platform services such as Web of Science, as this is dependent on organisations' subscriptions and must be included for transparency and repeatability.

Unpublished evidence may be identified through Steering Group connections, targeted requests and open calls for evidence. Where information is not in the public domain and cannot be published in full as supplementary information, there should be a clear record of how the information was obtained and summary of the methods and findings (e.g. number of records, mean and standard deviations for the data) provided as a minimum. This will help to ensure that the need to include unpublished data is balanced with the need for transparency and repeatability.

Grey literature can be found through the searching of organisations websites and also through search engines such as Google Scholar. Tips for efficient searching are provided in Appendix 15.3 (page 44).

In addition to peer reviewed, grey literature and unpublished literature, **Expert Elicitation** may also be required, particularly where there is limited available written information or where there are differences in opinions across a range of groups. There is no way to eliminate the cognitive bias that forms opinion and so expert opinion should be used with caution and obtained in a structured manner. To increase the reliability of findings from expert elicitation the method should:

- Be pre-tested to ensure it is fit-for purpose
- Use the most suitable experts as opposed to those that are most readily available
- Ensure the size of the group of experts is relevant, depending on the diversity of opinions
- Ensure sufficient time for experts to prepare for the consultation and reflect after the consultation
- Not combine judgements as this may mask minority and outlining opinions that may prove to be correct

Members of the Steering Group and Review Team may be well placed to suggest the types of evidence most likely to be used by the ER and the places where the Review Team should search. This information will be captured in the Protocol. Any types of evidence that will not be considered by the ER, such as other secondary research and reviews or theoretical and conceptual studies, should also be stated in the Protocol with justification of the reasons why.

Whilst developing the Protocol it will be necessary to trial the search strategy to ensure that it is fit for purpose. This may require iterations to ensure that the search strategy is as comprehensive as resources allow and captures information that will answer the review's question(s). At this stage the Review Team must also estimate the volume of the literature that may be found and the resources that will be required to use these in the review. This should be discussed with the Steering Group so that they can advise if any alterations to the scope of the review are required. A method

to predict how long screening will take is outlined in Defra project WT1552 (which can be accessed via: http://randd.defra.gov.uk).

5.3 Protocol Consultation

Once the Review Team has put together a draft Protocol, it should be reviewed and agreed by the User who should liaise with the Steering Group for feedback. The Protocol will act as a working document that may need to be refined through an iterative process as the ER progresses. Any changes should be made via consultation between the Steering Group and Review Team and clearly recorded. Good communication is essential to ensuring the review process is flexible, transparent and objective.

6 Search for Evidence

Tasks	✓
Follow the search strategy identified in the Protocol	
Regularly update the User on progress	
Confirm any alterations to the Protocol with the User and record clearly	
Record all search results in a database	

The Review Team should follow the Protocol to conduct the evidence search. Changes to the Protocol should be avoided; however, changes may sometimes be necessary. Any deviations should be agreed with the Steering Group and documented in the Final Report.

For each search, a record of the date, the database and search terms used, along with the number of hits and any date limits of the search should be recorded. The details of the individual pieces of evidence should be clearly recorded in a spreadsheet that will be shared with the User to ensure a transparent process. The publication name, date, and source location – including a hyperlink, or the saved location of the article should be included. Once the records of each individual search have been completed they should be combined to give a full list of the evidence found, removing any duplicates.

There are different considerations for searching for different types of evidence. Due to these differences, experts in information searching, such as librarians, could be consulted or included as members of the review team. Tips for efficient searching are provided in Appendix 15.3 (page 44).

Key Principle: Types of evidence searched
The question asked by an ER will partly determine the amount of evidence found from the different types of evidence searched. Grey literature and unpublished evidence may be especially needed for contemporary questions that have not received much academic attention; this type of evidence can also help to overcome publication bias.

7 Screen the Search Results

Tasks	✓
Apply criteria outlined in Protocol consistently	
Record the results of each screening phase fully	

On completion of the search the Review Team should **screen** the results to provide a more relevant evidence base for the synthesis stage. For this to be done in a systematic manner the predefined set of inclusion/exclusion criteria outlined in the Protocol should be followed. If changes are necessary these should be discussed with the Steering Group and be recorded in the final report.

Inclusion/exclusion criteria can be taken from the keywords in the topic or question or the question's PICO elements and will be defined in the Protocol. Example considerations for inclusion/exclusion criteria could include:

- Geographical references, e.g. UK/ European only
- Climatic conditions, e.g. temperate climatic conditions only
- Language restrictions, e.g. only evidence published in English
- Date restrictions, e.g. only evidence from after 2000
- Population restrictions e.g. rivers but not lakes
- Outcome restrictions e.g. water quality measured as a reduction in nitrogen and phosphorus

Screening the evidence found by the search should be done using a two phased approach. The **first phase screening** or the **first pass** includes reading only the title or headline of the evidence found. The evidence sources are then marked as: clearly relevant, clearly not relevant or uncertain. If the evidence is found to be clearly relevant or uncertain at this first stage it should be obtained in full. This evidence should be used to complete **second phase screening** or the **second pass**. This involves reading the abstract or first paragraph of the clearly relevant or uncertain evidence to identify those that meet the inclusion/exclusion criteria and will be used in the evidence extraction and synthesis phases. Databases containing the details of the outcomes of the first phase and second phase screening should be

created (e.g. in Excel) and retained in order to provide an audit trail for the ER process.

Good practice for the screening phase involves one person screening all the evidence found with an additional person independently screening a sub-section and comparing. This will ensure that bias has been reduced and the inclusion/exclusion criteria are being applied consistently.

Key Principle: Screening
The screening of search results ensures that only the most relevant findings are taken to the evidence synthesis stage. Using inclusion and exclusion criteria to do this reduces bias but must be clearly recorded in order to ensure transparency in reviewer decisions during screening process.

The refined list of search results will be used in the evidence extraction, critical appraisal (if a REA is being conducted) and synthesis stage. All the other items that have not met the inclusion/exclusion criteria at both the first and second screening stage should be recorded and made available as supplementary information alongside the final ER report. Not only will this aid transparency but such a reference list could be useful for someone wanting to update the ER or with an interest aligned to the ER topic.

8 Extract the Evidence

Tasks	✓
Create a systematic map of the fully screened evidence	

Once the evidence has been screened the next stage is to build on the database of included evidence to extract information relevant to the ER's question in a systematic manner. The method to collate extracted evidence will be dependent on the type of evidence found and on the aim of the ER. The information to be extracted from the articles will need to be defined *a priori* in the Protocol and used to create a database template. Examples of the information to be extracted include:

- The type of evidence
- The research design used
- The population studied
- The geographical context
- Details of the intervention applied
- Outcomes measured
- Evidence relating to the primary question (e.g. evidence of impact/response measured or observed)
- Evidence relating to secondary questions

Developing a template for information extraction will help to ensure that the extraction is done in a way that is consistent for each piece of evidence. If during the process of extraction it is found that the existing method is not capturing all relevant information then the template will require updating. Any changes must be recorded in an amended Protocol document. The resulting database of extracted information from evidence passing the screening criteria is often referred to as a **Systematic Map** of the evidence and is an essential output of the ER process and should be provided to the User at the end of the ER process. An example of a systematic map, produced by Randall et al., (2015) can be found at: www.environmentalevidencejournal.org/content/4/1/18 .

As a REA requires the evidence found to be critically appraised, additional information on the methods used in the each evidence source should also be recorded. How the evidence will be assessed for quality needs to be agreed at the Protocol stage and will determine the design of the template used for extraction. This will be discussed in Step 9.

9 Critical Appraisal of the Evidence (REAs only)

Tasks	✓
Evaluate relevancy of evidence to ER question	
Evaluate robustness of evidence	
Combine relevancy and robustness evaluations	

An essential part of a REA is to critically appraise the evidence found by the search. This ensures more relevant and reliable evidence is given greater consideration at the synthesis stage. Critically appraising the evidence involves evaluating each piece of evidence to consider both the relevance of the evidence to the REA question and also the robustness of the methodological quality utilised. The assessments of both of these aspects are then combined to provide an overall evaluation for each piece of evidence returned by the review.

9.1 Assessing the Relevancy of the Evidence

The first step of the critical appraisal phase is to evaluate the relevancy of evidence in relation to the REA question. As a potential wide range of questions could be addressed it should be recognised that different research designs and methods are more or less appropriate for answering different research questions. However, evaluations of the relevancy of evidence to the REA question should consider:

- The relevancy of the method used to the REA question
- The relevancy of the evidence to the target subject/population of the REA
- The relevancy of the intervention assessed
- The relevancy of the outcome measured

9.2 Assessing the Robustness of the Evidence

The Review Team should then make an evaluation of the robustness of the evidence returned by the REA, i.e. the accuracy of the evidence and the degree to which bias has been minimised. To do this it is useful to describe and categorise each piece of

evidence included by the REA in terms of study design type and method. Table 4 provides a categorisation of the types of evidence primarily used for ERs.

Table 4: Categories of evidence types

Category	Study Design Type
A	Quantitative experimental e.g. Before-after experiments, randomised control trials, non-randomised control trials
B	Quantitative observational e.g. before-after observations, case-controls, cohort studies, correlations
C	Qualitative studies e.g. interviews, expert elicitation
D	Economic studies e.g. cost-benefit/effectiveness/consequence studies
E	Reviews e.g. literature reviews, systematic reviews, reviews of randomised control trial

For each category of evidence a list of criteria relating to the accuracy and bias should be drawn up at the Protocol stage. This should consider whether:

- Specific questions and hypotheses are addressed
- Related existing research or theories are acknowledged
- Sources of funding and vested interests are declared
- The methodology used is clearly and transparently presented
- The degree to which the method reduces bias
- The method is appropriate for the research question and the conclusions reached by the study
- Assumptions made are outlined
- The geography and context of the study is clear, with a discussion of how relevant findings are to other contexts
- The methods used for measurements and analytical techniques are reliable
- Measurements and analytical techniques have been validated and verified
- Conclusions are backed up by well presented data and findings
- Links between descriptions of existing research, data, analysis and conclusions are clear and logical
- Limitations and quality have been discussed

Considerations for each category of evidence and examples of criteria that could be applied are provided in Appendix 15.4 (page 48).

Each piece of evidence that has met the screening criteria should be assigned to one of the above categories of design type and the relevant criteria used to assess its robustness. A class associated with the degree to which bias has been mitigated should then be assigned. Example classes are provided in Table 5.

Table 5: Example classes used to assess robustness of evidence

Class	Description
++ /3	All or most of the methodological criteria appropriate for the study type have been fulfilled (*low risk of bias*)
+ /2	Some of the methodological criteria appropriate for the study type have been fulfilled and those criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions (*risk of bias*)
− /1	Few or no methodological criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter (*high risk of bias*).

9.3 Combining Relevancy and Robustness Scores

To assign an overall grade for each piece of evidence at the critical appraisal stage it will be necessary to combine the scores given for relevancy and robustness. This allows higher scored pieces of evidence to be given greater weight at the synthesis stage.

Whilst there are many approaches to assign and combine scores it is recommended that for each criterion used for relevancy and robustness a score between 1-3 is given, this could also be represented as -, + and ++ if preferred. These scores can be combined so that weights from scores 1 (1*1) to 9 (3*3) can be given, whereby those articles that are most relevant and have the best quality methods are weighted the highest, and those with little relevance and poor method are ranked lowest.

Judgements applied for the assessment of relevancy and robustness can be used to exclude evidence as well as for weighting. For example, a minimum quality appraisal level can be set that defines those articles to be included and those of insufficient quality for use in any synthesis. This would be defined by the Review Team and will often require an iterative process of consideration, as when articles are read and data extracted it may become clear that certain study types are not relevant or have a methodological quality that is unacceptable.

Key Principle: Critical Assessment of the Evidence
Critical assessment of the evidence found by the review process is a key component of a REA. This must assess information for both relevancy and robustness. This could be done in a number of ways depending upon the information being considered but must be presented clearly to ensure transparency.

10 Synthesis of the Evidence

Tasks	✓
Describe the volume and characteristics of the evidence base	
Use the synthesised findings to answer the primary and secondary questions, if applicable, of the review	
Highlight implications of the findings for policy and/or practice	
Make recommendations for further research if relevant	

The synthesis stage for both a QSR and REA requires all evidence that has met the screening stages to be read and used to generate findings to answer the ER question and to enable conclusions to be made on the adequacy of the evidence base.

The principles of synthesising evidence for a REA and a QSR are similar and are outlined below. However, a REA includes a critical appraisal of the evidence, so that evidence that is more relevant and robust is given greater weight when establishing an answer to the question/s being addressed by the REA.

10.1 Describing the Volume and Characteristic of the Evidence Base

Providing a description of the volume and characteristics of the evidence found by the review enables the adequacy of the overall evidence base to answer the primary question to be determined.

The details described will be specific to each question but could include descriptions of the following:

- Types of evidence (e.g. amounts of primary research/amounts of peer reviewed evidence and grey literature)
- Research design used (e.g. experimental/quasi-experimental/observational)
- Populations studied
- Interventions studied

- Outcomes measured
- Details of context (for example geographical region and climatic conditions).

Summarising details in such a way will also enable any gaps or excesses of evidence to be identified which is of value when commissioning future research and can also highlight any concerns regarding the evidence base's ability to address the ER's primary question. A description of the volume and characteristics of the evidence found for a REA also needs to include an overall summary of the critical appraisal of the evidence found, e.g. How much similarity there is in the quality of evidence, how much of the evidence was assessed as good quality.

10.2 Describing What the Evidence Indicates

The synthesis stage needs to consider what the evidence indicates in relation to the ER's primary question, this will be context specific, depending on the question and the evidence base. However, for both a QSR and a REA it is likely that a **narrative synthesis,** as opposed to a quantitative synthesis or meta-analysis, will be more appropriate as more quantitative analysis is likely to be beyond the scope of most of these types of ERs.

Narrative syntheses have been identified as being particularly useful when communicating findings for policy and practice (Popay, 2006). Such syntheses primarily rely on the use of words and text to summarise findings from multiple studies. Tables and graphical descriptions can also be used to support narrative descriptions, for example a matrix of all the screened evidence against criteria relating to the primary question, e.g. keywords, data types and outcomes measured could be used. Additionally, this could include some quantitative data if suitable. The use of infographics to communicate information may be of particular use.

Based on the relationships within the evidence base, statements regarding the consistency and convergence of the evidence can be made. Examples could include:

- Consistent evidence = A range of different forms of evidence point to identical, or similar conclusions
- Contested evidence = One or more study/studies directly refutes or contest the findings of another study or studies

- Mixed evidence = Studies based on a variety of different designs or methods, applied in a range of contexts, have produced results that contrast with those of another study (DfID, 2014).

Such statements should be supported with the data, e.g. how many individual pieces of evidence support, how many contest and under what scenarios. If used in the final report it should be noted that such statements do not take into account the robustness (quality) of the evidence found and therefore should be treated with caution. Where a critical appraisal of the robustness of the evidence has been conducted evidence statements can be produced as detailed in Step 11.

10.3 Implications of the Findings

Once the evidence found has been used to answer the ER question the final part of the evidence synthesis must relate the findings of the ER to the policy and/or practice context outlined at the inception meeting. For example, is the evidence supportive of current policy and/ or practice?

10.4 Suggestions for Further Research

Finally, the synthesis of the evidence should include a discussion of suggestions for further research, including whether a more in depth ER is recommended.

Key Principle: Synthesis of evidence
The synthesis stage requires all evidence that has passed screening to be used to generate findings that answer the ER question. The synthesis should contain an overview of characteristics of the evidence base, a summary of what the evidence indicates, the policy and practice implications and suggestions for further research

11 Assigning Confidence and the Creation of Evidence Statements (REA only)

Confidence in what the evidence base indicates can improve the utility of an ER. This enables decision makers to be aware of any uncertainties and improve the information they have available to make a decision.

Assigning confidence in the statements can only be done from a REA or SR because understanding the robustness (quality) of the evidence is essential in the assessment.

The first step in presenting the evidence in this way will be to use the screened evidence to determine statements that relate to ER question. This can be done at the Protocol stage or by using numbered statements that form a narrative synthesis. The statements should be discussed with the User with input from the Steering Group.

To assign confidence to these statements both the robustness (quality) and quantity of the evidence supporting the statement should be considered. By combining these elements, categories of confidence can be assigned such as those given in **Table 6**.

Table 6: Categorisation of certainty

Class	Description
High	Evidence from many studies classed as + and/or 1 or more studies classed as ++
Medium	Evidence from one or more studies that have been classed as at least +
Low	Evidence from a small number of studies or studies classed as −
Contested	Evidence that differs in its conclusions (present the class for each study/evidence)

The statements and their associated confidence category can be used in the synthesis but also used collectively to provide a summary of the ER findings.

12 Communication of the Evidence Review Findings

Tasks	✓
Produce final report following the final report template	

Ensuring that the outputs of the ER are communicated effectively will be essential to ensure the success of the ER. The final ER report must communicate the findings in a concise and transparent manner appropriate for the User, Steering Group and a wider readership. An appropriate amount of time should be allowed for iterations of the draft versions of the final report which must contain the elements outlined in the Final Report checklist in Appendix 15.5 (page 59).

A non-technical Executive Summary is required to ensure that the ER findings can be readily understood by those on the Steering Group and non-experts who have an interest in the topic of the ER. It should provide an overview of the whole project but should primarily focus on communicating the results of the evidence synthesis and what the evidence indicates in relation to the primary question and the policy context. An example of a clearly written executive summary can be found from project WT1562: What Methods are Currently Available for the Quantitative Detection of Infectious Human Viruses in Bathing Waters? (via http://randd.defra.gov.uk).

The background and policy context of the work will have been defined at the Inception Meeting and captured in the Protocol but should be included with the final outputs of the ER for completeness. The final report should also include a section providing a clear description of how the ER was conducted, including highlighting where any changes to the Protocol occurred. This is essential to ensure transparency in the process and to provide confidence that bias has been minimised and the outputs are credible. Details of how the search was conducted should include:

- The search terms used
- The inclusion/ exclusion criteria
- The number of records found by each search

- The number of records meeting the screening criteria at the 1st pass
- The number of records meeting the screening criteria at the 2nd pass

Using a flow diagram is a clear way to communicate the number of records included and excluded at each stage of the ER, an example is provided in Figure 4.

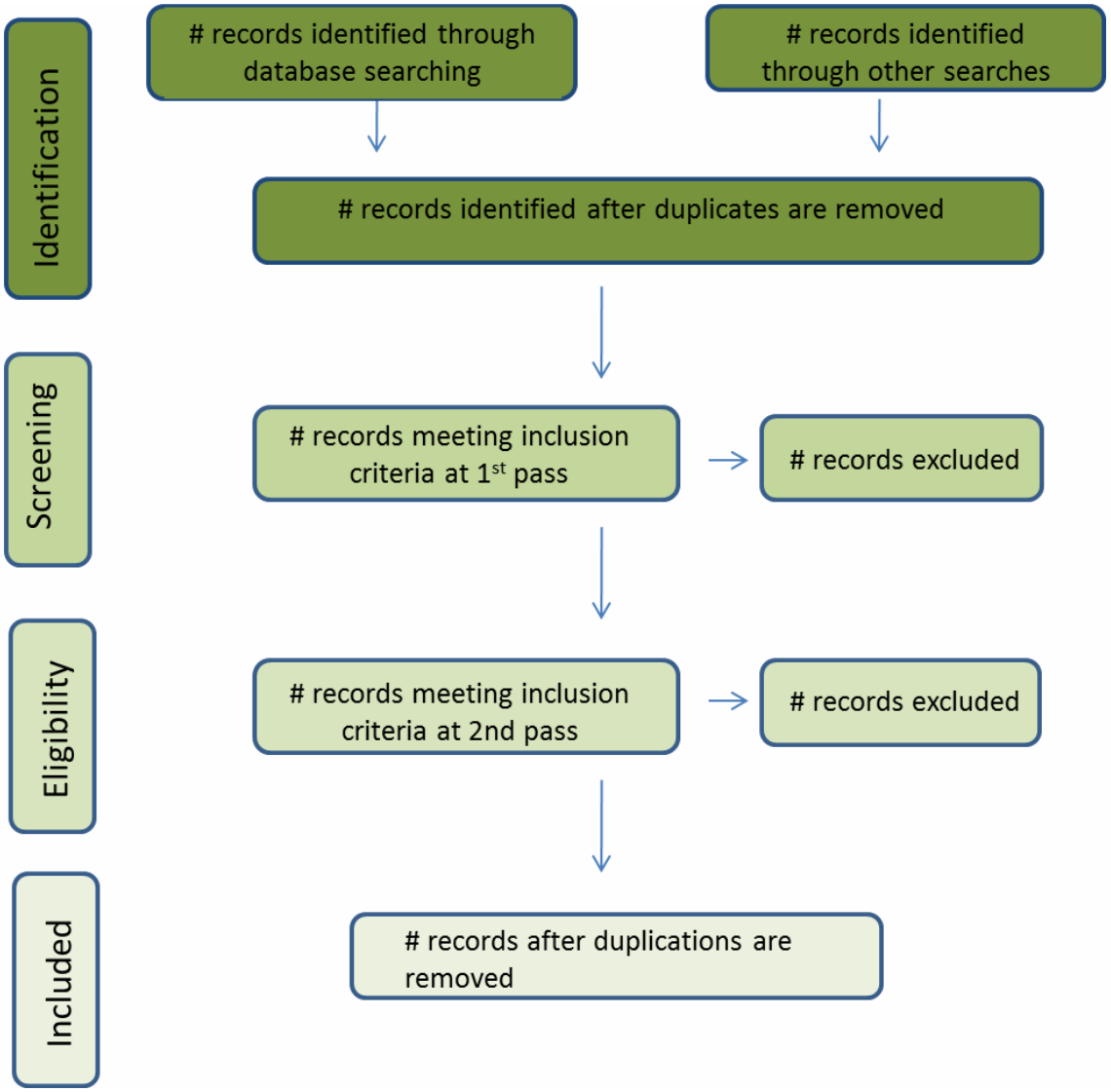

Figure 4: An example flow diagram to document the records of evidence found at each stage of the ER adapted from The PRISMA Group, 2009 (http://www.prisma-statement.org/2.1.4%20-%20PRISMA%20Flow%202009%20Diagram.pdf).

An REA will also need to communicate how evidence was critically appraised, with the criteria used to assess relevancy and robustness, along with records of the scores for each evidence source found.

In addition to the Final Report, the Review Team should also supply the databases of all the evidence found at each stage of screening (i.e. initial search, 1st pass and

2nd pass), so that an audit trail of how the ER was conducted can be followed. The Systematic Map of the extracted information from the evidence meeting the inclusion criteria should also be provided. These could be of use for those interested in conducting further work in relation to the ER or in a topic similar in nature.

Key Principle: Communication of findings
Ensuring that the findings are reported in a clear and transparent manner will be essential to the success of the ER. A non-technical executive summary, description of the background drivers of the work and the methods used along with the synthesis of the findings are required to ensure transparent communication with the Steering Group and wider audiences.

User Lead

13 Sign Off

Tasks	✓
Ensure that the ER has provided a clear and sufficient response to the question(s)	
Ensure that the quality of the ER is the highest possible given the scope of the review	
Sign-off the project if content with the response and the quality	
Discuss with the Steering Group the findings and identify if further work is required	

On completion of the final report it should be passed to the User for the Steering Group to review. The User and Steering Group should consider whether:

- The ER has provided a clear and sufficient response to the question(s) set (All Steering Group)
- The quality of the ER is the highest possible given the scope of the review (Overall Assurer to review)
- The implications of the findings of the ER for policy and practice have been clearly set out (All Steering Group)
- Suggestions for further research and analysis have been clearly set out (All Steering Group)

Production of the Final Report will require iteration of drafts between the User/Steering Group and Review Team. The timescales for this and the deadlines for Steering Group comments should be outlined in the Protocol and any modifications or extensions agreed. Within the Steering Group, the Overall Assurer will have a particular responsibility to provide guidance on the quality of the ER and to ensure the standard is as high as possible, within the resource constraints of the review.

The potential need to build on the review, i.e. conduct a REA after a QSR or a SR after a REA, should be considered and will depend on the findings of the completed ER

14 References

Collaboration for Environmental Evidence. 2013. Guidelines for Systematic Review and Evidence Synthesis in Environmental Management. Version 4.2. Environmental Evidence http://www.environmentalevidence.org/wp-content/uploads/2014/06/Review-guidelines-version-4.2-final.pdf

DfID (Department for International Development), 2014. How to Guide: Assessing the Strength of Evidence https://www.gov.uk/government/publications/how-to-note-assessing-the-strength-of-evidence

DTLR (2002). Economic Valuation with Stated Preference Techniques Summary Guide https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191522/Economic_valuation_with_stated_preference_techniques.pdf

Eftec (2009). Valuing Environmental Impacts: Practical Guidelines for the Use of Value Transfer in Policy and Project Appraisal https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/182376/vt-guidelines.pdf

Gough, D., Oliver, S., Thomas, J. (2013). Learning from Research: Systematic Reviews for Informing Policy Decisions: A Quick Guide. A paper for the Alliance for Useful Evidence. London: Nesta http://www.alliance4usefulevidence.org/assets/Alliance-FUE-reviews-booklet-3.pdf

Haddaway, NR., Collins, AM., Coughlin, D., Kirk, S. 2015 The Role of Google Scholar in Evidence Reviews and Its Applicability to Grey Literature Searching

HM Treasury (2011). The Magenta Book: Guidance for evaluation https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220542/magenta_book_combined.pdf

HM Treasury (2015). The Aqua Book: Guidance on producing quality analysis for Government https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government

Homes and Communities Agency (2014) Additionality Guide https://www.gov.uk/government/publications/additionality-guide

James, K., Randall, NP., Millington, A. 2014. Quick Scoping Review: The impact of pesticides used for amenity purposes on controlled waters http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=19195&FromSearch=Y&Publisher=1&SearchText=WT1546&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M. and Britten, N. Roen, K. & Duffy, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. Final report, Institute of Health Research, Lancaster: ESRC Methods Programme. http://www.researchgate.net/publication/233866356_Guidance_on_the_conduct_of_narrative_synthesis_in_systematic_reviews_A_product_from_the_ESRC_Methods_Programme

Randall, NP., Donnison, LM., Lewis, PJ., James, KL. 2015. How effective are on-farm mitigation measures for delivering an improved water environment? A systematic map. Environmental Evidence 4(18). http://www.environmentalevidencejournal.org/content/4/1/18

The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta- Analyses: The PRISMA Statement. PLoS Med 6(6) http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000097

HM Treasury (2013). The Green Book: appraisal and evaluation in central government https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

UK Government Civil Service Web Guidance (2013). The Need for Reviewing Evidence http://www.civilservice.gov.uk/networks/gsr/resources-and-guidance/rapid-evidence-assessment/what-is

15 Appendices

15.1 Inception Meeting Checklist

Specific outputs of the Inception Meeting should include:

- An agreed conceptual model of the science-policy interface surrounding the primary question
- An agreed primary question
- Agreed secondary question(s) if relevant
- An agreed clear and achievable scope for the QSR or REA
- Clarification of the various roles of the Steering Group and Review Team
- Agreed timetable for the production of Protocol and the ER process

The Protocol Template overleaf will help guide the Inception Meeting and ensure the necessary outputs that will enable the draft Protocol to be developed are delivered.

15.2 Protocol Template

Background for the work:
Conceptual model: A description of how the policy, practice and science related to the evidence review topic interact and influence each other

Primary Question: The main question to be addressed by the review	
Population:	
Impact:	
Control:	
Outcome:	
Secondary questions: Additional questions to be addressed by the review that contribute to building up the evidence surrounding the primary question	
Scope of the work: clear limits of the question to be addressed by the review	
Geographical reference	
Climatic conditions	
Language restrictions	
Date restrictions	
Population restrictions	
Outcome restrictions	

Other restrictions	
Potential Keywords: words or phrases that could be developed into search strings and used in the systematic search for evidence	
Keywords related to the population	
Keywords related to the intervention	
Keywords related to the comparator	
Keywords related to the outcome	
Other relevant keywords	
Potential Search locations: Where evidence could be searched for	
Locations for peer reviewed evidence (e.g. bibliographical databases)	
Locations for grey literature (e.g. websites of key organisations)	

Locations for unpublished data (e.g. key experts to be contacted)	
Will other reviews and secondary reviews be considered?	
Will theoretical or conceptual studies be considered?	
<u>Subsequent milestones:</u>	
Protocol submission date	
Other deliverables	
Timeline	

15.3 Search Tips

Searching for evidence is a key part of an ER whilst the main document above stresses the importance of minimising bias in the searching step of an ER there are also additional tips that can help to improve the efficiency of a search for relevant evidence. These are given below, divided by evidence type.

15.3.1 Published literature

Bibliographic databases of published journal articles and academic search engines are common places to search for peer reviewed evidence. Bibliographic databases catalogue citations of academic papers according to a predefined list of journals, publishers or subject areas (Haddaway et al., 2015). Some platforms exist, such as Web of Science, enable the searching of multiple databases. Web of Science additionally allows the searching of conference proceedings which can help to also identify grey literature. Typically access to bibliographic databases requires a subscription fee to be paid. Academic search engines (eg Google Scholar) sign-post to citations of academic research identified by 'crawling' the internet for information. Whilst these have the advantage of enabling a broader search they use unknown algorithms, which may change, preventing transparency and reproducibility. However, searches can be recorded as citations using tools such as DownThemAll (https://addons.mozilla.org/en-US/firefox/addon/downthemall/) and Import.io (https://import.io/). See WT1552 for more information. Table 7 presents attributes of some commonly used databases and search engines.

Most databases and platforms permit the use of **Boolean** operators. Boolean operators e.g. AND, OR, NOT, can be used to create relevant **search strings** out of identified keywords. Databases often have the facility to search for different versions of words, known as stemming and synonym searching. For example chang* can be used to search for all of the following; change, changes, changed, changing etc. The keywords can also be used to develop some exclusion criteria (using the NOT operator) that will be used to identify studies that are not relevant but may be returned in the search result. Databases will vary in the manner keywords are used (e.g. different symbols for wildcards) and therefore the help pages of each database might have to be viewed to identify how search strings need to be modified for different searches.

Table 7: Attributes of selected databases and search engines (adapted from WT1552)

Name	Open Access Search	Search Engine or Database	Platform available through	Description
Academic Databases				
Biosis Citation Index	No	Database	Web of Science http://wokinfo.com/products_tools/specialized/bci/	Citation indexing of journals, reports, books, serials, monographs, meetings and patents related to Life sciences research
CAB Abstracts	No	Database	CAB Direct; EBSCOhost; OVID; Web of Science http://www.cabi.org/publishing-products/online-information-resources/cab-abstracts/	International database of journals, books and conference proceedings related to applied life sciences research
DOAJ	Yes	Database	DOAJ https://doaj.org/	Platform for open access journals
GreenFile	Yes	Database	EBSCOhost www.greeninfoonline.com.	Collection of scholarly, government and general-interest titles related to environmental research
JSTOR (Archives)	No	Database	JSTOR http://www.jstor.org/	Digital library of academic journals, books, and primary sources
PubMed	Yes	Search engine	PubMed http://www.ncbi.nlm.nih.gov/pubmed	Citations database o journals and books for biomedical literature
Scopus	No	Database	Scopus http://www.scopus.com/	Abstract and citation database of scientific peer-reviewed journals, books and conference proceedings
Social Sciences Research Network	Yes	Platform	Social Sciences Research Network http://www.ssrn.com/en/	Social science research
Web of Science Core Collections	No	Database	Web of Science http://wokinfo.com/	Database of research data, books, journals, conference proceedings, publications and patents related to social sciences, arts and humanities
Theses and Dissertations				
DART-Europe E thesis	Yes	Database	DART-Europe E thesis http://www.dart-europe.eu/basic-search.php	European theses and Dissertations
EThOS (British Library)	Yes	Database	EThOS (British Library) http://ethos.bl.uk/Home.do	UK doctoral theses
Search Engines				
Google Scholar	Yes	Search engine	Google Scholar https://scholar.google.co.uk/	Internet search engine for scholarly literature
Microsoft Academic Search	Yes	Search engine	Microsoft Academic Search http://academic.research.microsoft.com/	Multidisciplinary search engine for scholarly literature
Publisher Databases/Platforms				
Science Direct	No	Database	Science Direct http://www.sciencedirect.com/	Database of Science Direct published literature
Springer Link	Yes	Platform	Springer Link http://link.springer.com/	Springer published literature
Wiley Online Library	Yes	Platform	Wiley Online Library http://onlinelibrary.wiley.com/	Wiley published literature

15.3.2 Grey literature

Some types of grey literature may be identified through the use of databases and search engines. For example CAB Abstracts, Scopus and Web of Science core collection cover conference proceedings (see Table 7). Theses and dissertations are also a useful source of grey literature as these may contain unpublished information and results that may help to prevent publication bias. Databases such as the DART E thesis and EThOS are available which allow the searching of these.

Search engines such as Google Scholar also cover grey literature such as conference proceedings, theses etc. Using a search engine presents a number of advantages over databases such as Web of Science, these include being free to access and not being restricted to certain topic areas. However, whilst research by Haddaway et al. (2015) demonstrated that Google Scholar can return moderate amounts of grey literature compared to Web of Science when search strings were used in both Google Scholar and Web of Science Google Scholar missed some important literature in 5 out of 6 case studies. Furthermore, Google Scholar did not identify any information that had been identified through searches of specific organisational websites. Therefore, it is recommended that Google Scholar is not used in isolation for evidence review searches rather as an addition to increase coverage of grey literature returned. Haddaway et al. (2015) investigated the use of Google Scholar for accessing grey literature in six SRs and found that more grey literature was found when title searches as opposed to full text searches were carried out and that the average highest frequency of grey literature was found around page 35 of the search results. Therefore, comprehensive searches should make consideration of this and be planned accordingly.

In addition to the use of databases and search engines specific searches of organisations' websites may need to be undertaken in order to obtain relevant and representative grey literature. The search strings developed for searching online databases will need to be adapted in order to reflect differences in the search engines of organisations websites which typically do not accept as many terms and/or Boolean operators. In many cases a manual search through the listed reports might be necessary. A list of relevant organisations should have been developed in the Protocol but may need to be refined or added to at the searching stage. The

steering group may be well placed to advise on which websites will be the most appropriate to search.

WT1552 (http://randd.defra.gov.uk) identified that tools that assist with the automated extracting of information from websites have considerable potential to improve the efficiency of searching for grey literature. These include crawling software such as import.io (https://import.io/) which can visit multiple websites from a specified list to extract data from search results or tables into a downloadable databases. See WT1552 for more information and the JWEG community site (https://connect.innovateuk.org/web/jweg) for instructional videos.

15.3.3 Unpublished literature

In addition to published and grey literature it may be necessary to supplement searches with literature that has not been published. This will help to overcome publication bias and may be achieved through contacts of the review team and steering group, data requests and calls for information. WT1552 identified the DataTool software (http://datatoolbar.com/) as being able to extract contact details in order to facilitate contacting individuals and groups for unpublished evidence.

15.4 Critical Appraisal Templates

A: Quantitative Experimental Design Quality Template

Title of Evidence Review/Statement:
Title of study reviewed:
Date and authors of study reviewed:
Name of quality assessor:
Date completed:

Criteria		Score	Comments
General	Are the question(s) and hypothesis/hypotheses addressed by the study clearly identified?	□++ □+ □-	
	Are related existing research and theories acknowledged?	□++ □+ □-	
	Are sources of funding and vested interests declared?	□++ □+ □-	
Methodology	Is the sample population used in the study representative of the overall population that is the subject of the study and is it relevant in the context of the evidence statement (e.g. relevant to England/UK)	□++ □+ □-	
	Were the experimental/management interventions well described?	□++ □+ □-	
Method ology	Was the allocation of the management/experimental interventions	□++ □+	

	random? If not are confounding factors likely?	□-	
	Was an adequate control group used? Was this similar to the population receiving the management/experimental intervention?	□++ □+ □-	
	Were outcome variables/measures reliable? I.e. were outcome variables/measurements objective, was there any indication that measures had been validated or subjected to another QA processes?	□++ □+ □-	
	Were the experimental/management interventions applied representative in the context of the evidence statement (e.g. relevant to England/UK)	□++ □+ □-	
Analysis	Were the analytical methods appropriate?	□++ □+ □-	
	Were the estimates of effect size given or calculable?	□++ □+ □-	
	Was the precision of the intervention effects given or calculable? I.e. Were confidence intervals and or p-values for the effect estimates given or calculable?	□++ □+ □-	
Summary	Overall how well was bias minimised by the study and how relevant is it to the evidence review/ statement? I.e. how well are the criteria above met?	□++ □+ □-	

B: Quantitative Observational Study Design Quality Template

Title of Evidence review/Statement:
Title of study reviewed:
Date and authors of study reviewed:
Name of quality assessor:

Criteria		Score	Comments
General	Are the question(s) and hypothesis/hypotheses addressed by the study clearly identified?	□++ □+ □-	
	Are related existing research or theories acknowledged?	□++ □+ □-	
	Are sources of funding and vested interests are declared?	□++ □+ □-	
	Is the sample population used in the study representative of the overall population that is the subject of the study and is it relevant in the context of the evidence statement (e.g. relevant to England/UK)	□++ □+ □-	
	Were the experimental/management interventions applied representative in the context of the evidence statement (e.g. relevant to England/UK)	□++ □+ □-	

Methodology	How were the exposure and comparison groups selected? Was bias minimised?	□++ □+ □-	
	Was the selection of explanatory variables based on a sound theoretical basis?	□++ □+ □-	
	How well were likely confounding factors identified and controlled? Were there likely to be any confounding factors that have not been controlled for that could cause bias?	□++ □+ □-	
	Were outcome variables/measures reliable? I.e. were outcome variables/measurements objective, was there any indication that measures had been validated or subjected to another QA processes?	□++ □+ □-	
Analysis	Were the analytical methods appropriate?	□++ □+ □-	
	Were multiple explanatory variables considered and accounted for in the analysis?	□++ □+ □-	
	Were the estimates of effect size given or calculable?	□++ □+ □-	
	Was the precision of the intervention effects given or calculable? Were they meaningful? I.e. Were confidence intervals and/ or p-values for the effect estimates given or calculable?	□++ □+ □-	

Summary	Overall how well was bias minimised by the study and how relevant is it to the evidence review/statement? I.e. how well are the criteria above met?	□++ □+ □-	

C: Qualitative Studies (e.g. interviews, expert elicitation etc.) Design Quality Template

Title of Evidence review/Statement:
Title of study reviewed:
Date and authors of study reviewed:
Name of quality assessor:

Criteria		Score	Comments
General	Was the aim of the interview/elicitation clearly stated?	□++ □+ □-	
	Are sources of funding and vested interests are declared?	□++ □+ □-	
Methodology	Was the consultation method tested to ensure suitability?	□++ □+ □-	
	Are the questions asked clearly identified?	□++ □+ □-	
	Are the experts/interviewees asked clearly identified?	□++ □+ □-	
	Are the experts/interviewees the most suitable and representative? i.e. was the size of the group suitable for the diversity of opinions	□++ □+ □-	

Methodology	Were minority opinions stated?	□++ □+ □-	
	Were the conclusions based on the information gained from the experts/interviewees?	□++ □+ □-	
Synthesis	Were the range and diversity of opinions clearly stated?	□++ □+ □-	
Summary	Overall how well was bias minimised by the study and how relevant is it to the evidence review/statement? I.e. how well are the criteria above met?	□++ □+ □-	

D: Economic Studies (e.g. cost-benefit/effectiveness/consequence studies, willingness to pay surveys etc.) Design Quality Template

Title of Evidence review/Statement:

Title of study reviewed:

Date and authors of study reviewed:

Name of quality assessor:

Criteria		Score	Comments
General	Is the question addressed by the study and the purpose of the analysis clearly identified?	□++ □+ □-	
	Are related research and theories acknowledged and correctly interpreted, e.g. for constructing hypotheses?	□++ □+ □-	
	Are sources of funding and vested interests declared?	□++ □+ □-	
Methodology	Is there clarity about the basis of any economic estimates (e.g. welfare or GDP) and is the methodology compliant with corresponding statements of best practice, e.g. Treasury Green Book (HM Treasury, 2013)?	□++ □+ □-	
	Are the reference case or "baseline" and geographic boundaries for analysis (e.g. local, regional or national) clearly identified and appropriate?	□++ □+ □-	
	Where relevant, do "Willingness To Pay" (stated preference) surveys comply with established best practice such as the DTLR *Economic Valuation with Stated*	□++ □+ □-	

Methodology	*Preference Techniques* guide (Pearce et al 2002), in particular regarding sampling and bias reduction?	□++ □+ □-	
	Where relevant, do environmental "benefits transfer" studies comply with established best practice such as Defra's Value Transfer guidelines (Eftec 2009)?	□++ □+ □-	
Analysis and reporting	Are any econometric estimation techniques appropriate and robust?	□++ □+ □-	
	Does analysis avoid double-counting, account properly for additionality/baseline impacts and (for spatial studies) issues such as displacement, substitution, and crowding-out (Homes and Communities Agency, 2014)?	□++ □+ □-	
	Are uncertainties analysed (e.g. through sensitivity analysis) and made clear in reporting, and is the handling of non-monetised impacts in any value or cost-benefit judgements robust?	□++ □+ □-	
Summary	Overall, are the conclusions supported by the work and how well were any biases minimised and uncertainties accounted for?	□++ □+ □-	

E: Reviews e.g. literature reviews, systematic reviews, reviews of randomised control trial etc. Design Quality Template

Title of Evidence review/Statement:
Title of study reviewed:
Date and authors of study reviewed:
Name of quality assessor:

Criteria		Score	Comments
General	Is the question/topic addressed by the review clearly identified?	□++ □+ □-	
	Are sources of funding and any vested interests declared?	□++ □+ □-	
Methodology	Was a search strategy outlining key words and sources to be searched identified *a priori* and used consistently?	□++ □+ □-	
	Was publication bias mitigated through the identification of grey/unpublished literature	□++ □+ □-	
	Is there a clear rationale for the inclusion of studies and is this applied consistently	□++ □+ □-	
	Has the robustness and relevancy of the information been critically appraised?	□++ □+ □-	

Synthesis	Has information from the review synthesised information in a way that minimised bias	□++ □+ □-	
	Do the conclusions relate to the information found by the review	□++ □+ □-	
Summary	Overall how well was bias minimised by the review and how relevant is it to the evidence review/ statement? I.e. how well are the criteria above met?	□++ □+ □-	

15.5 Final Report Checklist

Section of the report	Contents	✓
Executive summary	• Brief description of background to the ER e.g. policy context • Brief description of the Process/method used (full description elsewhere). Include comment on how the review differs from a standard ER (QSR/ REA) if that is applicable • Description of the volume and quality of the evidence found by the ER • Key findings (see also below in Results section) -For QSRs, the final report should include a statement explaining that a QSR does not include any appraisal of the evidence -For REAs, the process includes a critical appraisal of the evidence so comments on uncertainty will be able to be provided • Implications for policy and practice and for further research (NB implications not recommendations)	
Acknowledgements	• Details of the funding sources • Details of the Steering Group members and others who have provided input • Record of any competing interests of those involved with the review	

Background and Methodology	• Outline of why the work needed (i.e. the policy./practice context) • Reason for choice of method • Description of primary question and, if appropriate, secondary questions • Description of methods used to include: -PICO elements -Search strategy detailed in full	
Results	• Flow diagram showing how many results obtained at each phase • Details on the volume and characteristics of the evidence base included • Synthesis of findings from the evidence included • For REA only – Include section on critical appraisal • For REAs only - Produce Evidence Statements to Include information on confidence	
Conclusions	• Key findings in relation to the primary and secondary questions • Implications for policy and practice • Implications for future research (comment on evidence gaps highlighted by the ER). This may include suggestions for upgrade to REA or SR or for additional QSRs • Comment on ER process – Lessons learned, what could be improved, specific comments if ER was non-standard etc.	
Additional material	• Spreadsheets of evidence found and included/excluded at screening phases • A Systematic Map of all materials read at full text should be supplied in Excel format • All references should be included as an Appendix to the final report	

15.6 Further Reading Critical Appraisal

Collaboration for Environmental Evidence. 2013. Guidelines for Systematic Review and Evidence Synthesis in Environmental Management. Version 4.2. Environmental Evidence: Available form www.environmentalevidence.org/Documents/Guidelines/Guidelines4.2.pdfhttp://www.environmentalevidence.org/Documents/Guidelines/Review%20guidelines%20version%204.2%20final.pdf

DFID (Department for International Development), 2014. How to Guide: Assessing the Strength of Evidence https://www.gov.uk/government/publications/how-to-note-assessing-the-strength-of-evidence

Hannes K. Chapter 4: Critical appraisal of qualitative research. In: Noyes J, Booth A, Hannes K, Harden A, Harris J, Lewin S, Lockwood C (editors), Supplementary Guidance for Inclusion of Qualitative Research in Cochrane Systematic Reviews of Interventions. Version 1 (updated August 2011). Cochrane Collaboration Qualitative Methods Group, 2011. Available from http://cqrmg.cochrane.org/supplemental-handbook-guidance

Harden A, Gough D (2012) Quality and relevance appraisal. In Gough, D, Oliver, S, Thomas, J (2012) *An Introduction to Systematic Reviews*. London: Sage Publications Ltd, pages 153-179. ISBN: 9781849201810.

Higgins, JPT., Altman, DG., Sterne JAC (2011) Assessing risk of bias in included studies. In Higgins JPT, Green S (editors). *Cochrane Handbook for Systematic Reviews of Interventions* Version 5.1.0. The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.

Pearce D, Ozdemiroglu E, Bateman I, Carson RT, Day B, Hanemann M, Hanley N, Hett T, Jones-Lee M, Loomes G, Mourato S, Sugden R, Swanson J (2002) Economic Valuation with Stated Preference Techniques, Department for Transport, Local Government and the Regions, London. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191522/Economic_valuation_with_stated_preference_techniques.pdf

Petticrew, M, Roberts, H (2003) Evidence, hierarchies, and typologies: horses for courses. Journal of Epidemiology and Community Health 57:527–529 http://jech.bmj.com/content/57/7/527.full.pdf

Popay J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., Britten, N., Roen, K., Duffy, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews, a product from the ESRC Methods Programme. (Version I). Institute of Health Research, Lancaster, UK.

Pullin, A., Knight, T. (2003) Support for decision making in conservation practice: an evidence-based approach http://ac.els-cdn.com/S1617138104700382/1-s2.0-S1617138104700382-main.pdf?_tid=2cc072dc-a2dc-11e3-b171-00000aab0f6b&acdnat=1393855407_f993d9605d703119caa97f0fe8d7685d

Spencer, L., Ritchie, J., Lewis, J., Dillon, L. (2003). Quality in Qualitative Evaluation: A framework for assessing research evidence. Cabinet Office http://www.civilservice.gov.uk/wp-content/uploads/2011/09/a_quality_framework_tcm6-38740.pdf

UK Government Civil Service Web Guidance (2013) Resources for appraising quantitative studies http://www.civilservice.gov.uk/networks/gsr/resources-and-guidance/rapid-evidence-assessment/how-to-do-a-rea

15.7 Further Reading Synthesis of Evidence

Arai, L; Britten, N; Popay, J; Roberts, H; Petticrew, M; Rodgers, M; Sowden, A (2007) Testing methodological developments in the conduct of narrative synthesis: a demonstration review of research on the implementation of smoke alarm interventions. Evidence & Policy: A Journal of Research, Debate and Practice 3(3) p361

Natural England (2013). Natural England Evidence Reviews: guidance on the development process and methods (NEER001) http://publications.naturalengland.org.uk/publication/5724390

Noyes J., Popay J., Pearson A., Hannes K. and Booth A. 2011. Chapter 20: Qualitative research and Cochrane reviews. In: Higgins JPT, Green S (editors), Cochrane Handbook for Systematic Reviews of Interventions Version 5.1. The Cochrane Collaboration. www.handbook.cochrane.org

Snilstveit B, Oliver, S, Vojtkova, M (2012) Narrative approaches to systematic review and synthesis of evidence for international development policy and practice, Journal of Development Effectiveness, 4:3, 409-429, DOI: 10.1080/19439342.2012.710641