EXECUTIVE SUMMARY

Cryptosporidium is a protozoan parasite that can cause the gastrointestinal disease known as cryptosporidiosis. Infection is acquired through the ingestion of *Cryptosporidium* oocysts. Water supplies can become contaminated with *Cryptosporidium* oocysts and act as a vehicle for transmission. Therefore, the effective management of *Cryptosporidium* in water supplies is necessary to prevent cryptosporidiosis outbreaks. Following a series of outbreaks documented in the United Kingdom in the 1980s and 1990s, the government created a Group of Experts on *Cryptosporidium* in Water Supplies to gain insights into the behaviour, prevalence, and movement of *Cryptosporidium* in the environment, as well as its significance as a human pathogen. The Group of Experts published three Reports on *Cryptosporidium* in Water Supplies, the last of which was published in 1998. The reports provided information, guidance and recommendations to safeguard water supplies against *Cryptosporidium* contamination.

Since 1998, academic research and technological advancement has vastly improved both the understanding of *Cryptosporidium* and the availability of options to help safeguard water supplies against it. This report presents an overview of the information in the three Reports of the Group of Experts, a root-cause analysis of *Cryptosporidium* events in England and Wales between 2005 and 2022, and a review of relevant literature since the Third Report of the Group of Experts. The following thematic topics are included: regulation and guidelines, catchment management, network management, *Cryptosporidium* species, detection and monitoring, and treatment technologies.

For *Cryptosporidium* events in England and Wales between 2005 and 2022, there was no single cause that was the most prevalent for causing the events. Insufficient treatment for corresponding catchment risk, faulty assets and poor procedures or staff training were the causes of most *Cryptosporidium* events in this period.

There are various options for the monitoring and detecting of *Cryptosporidium* in water supplies, these include monitoring for surrogates for *Cryptosporidium*, such as turbidity monitoring and particle counters, or using methods to directly detect the organism. Directly detecting *Cryptosporidium* can be undertaken using oocyst count methods, molecular methods and through new options such as miniaturised detection methods. Numerous treatment technologies for *Cryptosporidium* are available, these include solid-liquid separation technologies, traditional disinfection methods, ozone and Ultra-Violet disinfection. Emerging technologies such as ballasted clarification and ceramic membranes have recently had large-scale installations in the UK and show promising results.

The evidence-base collected in this report will be further developed by undertaking stakeholder engagement to obtain their views and experience of the current guidance and practices for managing *Cryptosporidium* in water supplies.