Species	Desk study data 2018	Summary of most recent (≤2 years) and/or relevant field survey data	ES Figure reference [TR010022/APP/6.2]	Appendix* [TR010022/APP/6.3]	Scoped into or out of the assessment
		sections during surveys in 2017. Further surveys in 2018 were conducted at drain Pb1, Watermeadows Ditch, Dam Brook and the River Derwent at Little Eaton junction. No water vole latrines were recorded on drain Pb1, Watermeadows Ditch or the River Derwent. Water vole latrines were recorded in spring 2018 on Dam Brook (which concurs with the water vole field sign found on Watermeadows Ditch in 2015). However, no signs of water vole were found on Dam Brook during extensive field surveys (including deployment of artificial latrine pads) in late summer 2018. Additionally, burrows observed at the water's edge, low down on the bank, were deemed likely to be those from signal crayfish rather than water vole. It is thus assumed that the water vole population is no longer present within Dam Brook.			refer to Section 8.9).
Otter	No records of otter from within the last ten years at Kingsway and Markeaton. Two recent otter records were found at Little Eaton junction.	Waterbodies surveyed for otter in 2015 were re-surveyed in 2017 (Bramble Brook at Kingsway junction; Markeaton Brook, Markeaton Lake, Mill Pond 1 and 2, and Mackworth Brook at Markeaton junction; and Dam Brook, Watermeadows Ditch, River Derwent and Boosemoor Brook at Little Eaton junction). New watercourses/stretches of watercourse were also surveyed in 2017 as a result of Scheme boundary changes, namely at: lower reaches of Bramble Brook at Kingsway junction; and upper and lower reaches of the River Derwent, lower reaches of Watermeadows Ditch and drain Pb1 at Little Eaton junction. Otter field signs (spraints) were recorded on Markeaton Brook only in 2017. No otter field signs were found on Bramble Brook in 2017; however, this absence was considered likely to be temporary given the single sprint recorded in 2015; extent of otter territories; and proximity of otter field signs at Markeaton junction. Based on the 2015 and 2017 survey findings otter are present at Kingsway and Markeaton junctions with watercourses used as both foraging and commuting routes. Two potential holt sites at Markeaton junction identified in 2015 were found not to be in use in 2017. Further surveys in 2018 were conducted at drain Pb1, Watermeadows Ditch, Boosemoor Brook, Dam Brook and the River Derwent at Little Eaton junction. Otter were recorded on the Watermeadows Ditch and throughout the River Derwent within the Scheme boundary and within 250m upstream and downstream of the A38 bridge over the River Derwent. No otter signs were found on Boosemoor Brook or Dam Brook. However, it is considered that these may be used as commuting routes for otters given the location of more suitable upstream habitat (on Boosemoor Brook) and connectivity to Watermeadows Ditch downstream (of Dam Brook). Due to the lack of suitable otter habitat and otter signs (spraints) on drain Pb1; it was considered that otters were absent from this watercourse in 2017.	Figures 8.28 and 8.29	Appendix 8.11(a) and 8.11(b)	Scoped in (Foraging and commuting otter only at Kingsway and Markeaton junctions; and Little Eaton junction).
White-clawed crayfish	At Kingsway and Markeaton junctions, white-clawed crayfish *Austropotamobius pallipes* records were identified within 2km of the junctions. At Little Eaton junction eleven records of white-clawed crayfish were identified within 2km of the junction and this included a record of a single female white-clawed crayfish within a section of Dam Brook.	During field surveys in 2015 at Kingsway and Markeaton junctions, four sections of watercourse were identified as having potential to support white-clawed crayfish populations (Markeaton Lake, Mill Pond 1, Mill Pond 2 and Middle Brook). However, no white-clawed crayfish were found in any of the surveyed watercourses. American signal crayfish *Pacifastacus leniusculus* were found on the western end of Markeaton Lake. It is highly likely that there is a strong correlation between the increasing numbers of signal crayfish (carriers of the well documented crayfish plague *Aphanomyces astaci*) and the absence of white-clawed crayfish downstream of Markeaton Park. This includes; the rest of Markeaton Lake, Mill Pond 1, Mill Pond 2, and the connecting Middle Brook that flows into the lower Markeaton Brook. During field surveys in 2015 at Little Eaton junction, four watercourses were identified as having potential to support white-clawed crayfish populations (River Derwent, Watermeadows Ditch, Dam Brook and Boosemoor Brook). One white-clawed crayfish was recorded within Dam Brook. Updated surveys were undertaken in 2017 and 2018 at Little Eaton junction. No white-clawed crayfish were found. Signal crayfish were identified on both the Watermeadows Ditch and the Dam Brook downstream and upstream of Little Eaton junction (at the weir) in 2017/18. It is considered that white-clawed crayfish are absent from these watercourses at Little Eaton junction.	Figures 8.30 and 8.31	Appendix 8.12(a), 8.12(b) and 8.12(c)	Scoped out (However, mitigation measures in place for prevention of spread of crayfish plague due to the presence of American signal crayfish – refer to Section 8.9).
Terrestrial invertebrates	Terrestrial invertebrate records included one species listed on Schedule 5 of the WCA, 33 species listed as species of principal importance, 36 species listed on the LBAP and one invasive species.	Terrestrial invertebrate surveys were conducted across semi-improved grassland areas within the Scheme boundary in 2015 (Sites A to G). These sites were reassessed in 2018 and updated surveys were conducted in 2018 on the following sites with notable habitat changes: • Site A: A38 Kingsway Roundabout LWS south island. This site was visited once in 2015 before health and safety considerations rendered the site unsafe to access. Changes in vegetation management in this area opened a safe access route and allowed three site visits in 2018. • Site C: Sturgess Field. This site was subject to three survey visits restricted to the western extent in 2015. A site at Little Eaton junction (proposed construction compound) which was not surveyed in 2015, was identified in 2017 as having potential to support terrestrial invertebrates. It was noted to have a mosaic of habitats with varied sward height grassland, scrub, and bare ground. This site was therefore subject to three terrestrial invertebrate surveys in 2018. All three sites surveyed in 2018 were assessed to be species diverse for terrestrial invertebrates; • Site A: A38 Kingsway Roundabout LWS south island. The survey identified 118 species of invertebrates across the three survey visits, including one S41 Priority Species (research only), namely: the cinnabar moth *Tyria jacobaea*. The open mosaic of grassland and scrub, with mature trees and deadwood was the habitat of highest importance for invertebrates within the site. • Site C: Sturgess Field. The survey identified 137 species of invertebrate within Sturgess Fields across the three	Figures 8.32 and 8.33	Appendix 8.13(a) and 8.13(b)	Scoped in