

Our Ref 3439-4
Date 2 June 2015

Mr P Foster
Barton Willmore
St Andrews House
St Andrews Road
Cambridge
CB4 1WB



Dear Mr Foster

EMS to Knapton Pipeline – Assessment of Cumulative Effects

Further to the request by Dr Salmon of AMEC to assess the cumulative effects of the EMS - Knapton pipeline and the Ebberston 'A' (EMA) – Knapton pipeline, I confirm that the route south of Givendale Head Farm is shared by both pipelines. The pipeline to Ebberston 'A' Site heads north of Givendale Head Farm to that site, whilst the EMS pipeline heads east to the EMS site, as shown on Figure 4.

Similar effects to those associated with the EMS-Knapton pipeline will also be generated by the EMA -Knapton pipeline. However, these effects are not necessarily cumulative in respect of the Corallian Aquifer that discharges into Troutsdale, due to the position of EMA Site in relation to the catchment boundaries and SPZs associated with the Troutsdale area.

The Ebberston 'A' site is located outside the Troutsdale SPZ, as shown in Figure 12.2. This figure has been taken from the ES supporting the planning application for the EMA – Knapton pipeline.

In view of the Ebberston 'A' site location being outside the catchment area for the Troutsdale abstraction it can be excluded from further consideration of cumulative effects as it will not have any cumulative effect on the Troutsdale water source if constructed and operated at the same time as the EMS project. Regardless of 'A' site's location outside the SPZ, it has been constructed to the same standard as the EMS site, with a bentomat membrane under the site. The ditches will need to be refurbished as detailed in the ES supporting the planning application for that site.

The first section of pipeline from Ebberston 'A' leaves the site and heads south towards Givendale Head Farm through the Outer Zone (SPZ 2) of the Troutsdale SPZ, with about 250m of pipeline located within SPZ.2. This is shown in Figure 12.2.

The effects upon the SPZ arising from the pipeline construction from 'A' Site are similar to those for the EMS pipeline, although there is a greater degree of mitigation because of the greater distance of the 'A' site pipeline from the abstraction point. The height of the pipeline above the Corallian Aquifer is about 20m greater than for the EMS site, providing a greater distance from surface to the Corallian Aquifer, adding additional mitigation.

(Reference to BGS Sheet 54 indicates that the Corallian rises slightly to the east from the 'A' site before dipping at about 4° southwards on the south side of Troutsdale.)

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The same mitigation measures used when constructing the pipeline from EMS would be used for the EMA pipeline and the residual significance of effect on the Corallian Aquifer is reduced to negligible.

Where the two pipelines share the same route, south of Givendale Head Farm, the effect is not necessarily doubled, especially as they are unlikely to be constructed at the same time.

Construction of both pipelines at the same time will not increase the risk of spillages and the residual significance of effect of construction upon the various receptors will remain negligible.

If the pipelines are constructed at different times, the same effects will apply individually to both pipelines but will remain negligible.

I have revised the Summary of Residual Effects and Evaluation of Significance that was previously submitted to North Yorks CC for consideration, and this is appended to this letter.

I trust that this addresses the issues but please come back to me if you need any further information.

Yours sincerely

Richard Elliott BA (Hons), BSc (Hons), CEng, MICE, MIStructE

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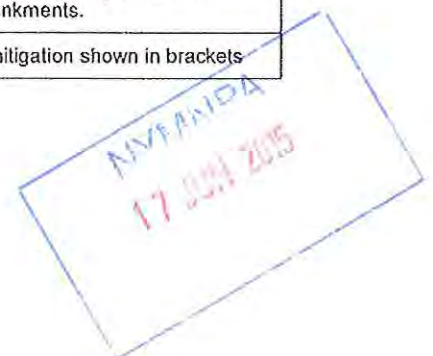
APPENDIX 1

Summary Table of Residual Effects and Evaluation of Significance

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8-Table X Summary of Residual Effects and Evaluation of Significance

Ref Number	Receptor	Sensitivity/ Value	Magnitude	Significance Level*	Rationale
Groundwater Bodies					
GW01	Corallian Aquifer at EMS	High	Moderate	Major/moderate (Negligible)	Mitigation, provided by rigorous site management, containment of all potential pollutants. Regular monitoring of springs in Troutsdale.
GW02	Corallian Aquifer along pipeline route near EMS	High	Moderate/ Low	Major/moderate (Negligible)	Mitigation, provided by rigorous site management.
GW03	Corallian Aquifer along pipeline route outside SPZ	High	Minor/ negligible	Minor/negligible (Negligible)	Mitigation, provided by rigorous site management.
GW04	Superficial deposits near KGS	Moderate	Minor	Minor (Negligible)	Mitigation, provided by rigorous site management, containment of all potential pollutants.
Groundwater Abstractions (Licensed)					
GA01	High Scarnridge Farm	High	Minor	Negligible	Isolated from site by topography
GA02	Allerston	High	Minor	Negligible	Mitigation not required. Pipeline passes outside SPZ.
GA03					
Wells					
WL01	None recorded				
Springs					
SP01	Troutsdale	High	Moderate	Major/moderate (Negligible)	Mitigation, provided by total containment of the EMS site by lining and sealed bunds with all potential sources of contamination contained on site.
SP02	Near A170	Moderate	Minor	Minor (Negligible)	Mitigation, provided by routing the pipeline away from springs and rigorous site management.
SP03					
Watercourses					
WC01	Troutsdale Beck	High	Moderate	Major/moderate (Negligible)	Mitigation, provided by total containment of the EMS site by lining and sealed bunds with all potential sources of contamination contained on site.
WC02	Friar Dike	Moderate	Low	Minor (Negligible)	Mitigation provided by temporary damming and over-pumping during construction of the pipeline crossing.
WC03	River Derwent	High	Major	Major (Negligible)	Mitigation provided by directional drilling under the river and associated flood plain within embankments.
* The level of the pre-mitigation significance is shown first, with the residual significance after mitigation shown in brackets					



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Ref Number	Receptor	Sensitivity/ Value	Magnitude	Significance Level*	Rationale
Ponds/Lakes					
PO01	No lakes or ponds within proposed development area				
GWDEs					
CS01	Weas Dale marshy grassland	Moderate	Negligible	Negligible	The pipeline route avoids the area and crosses the dry valley above the spring line.
Cumulative Effects					
CE01	Corallian Aquifer in SPZ along separate pipeline routes near EMA and EMS	High	Moderate/ Low	Major/moderate (Negligible)	Mitigation, provided by rigorous site management.
CE02	Corallian Aquifer along combined pipeline route outside SPZ	High	Minor/ negligible	Minor/negligible (Negligible)	Mitigation, provided by rigorous site management.
* The level of the pre-mitigation significance is shown first, with the residual significance after mitigation shown in brackets					
Key:					
	Value	Magnitude	Significance		



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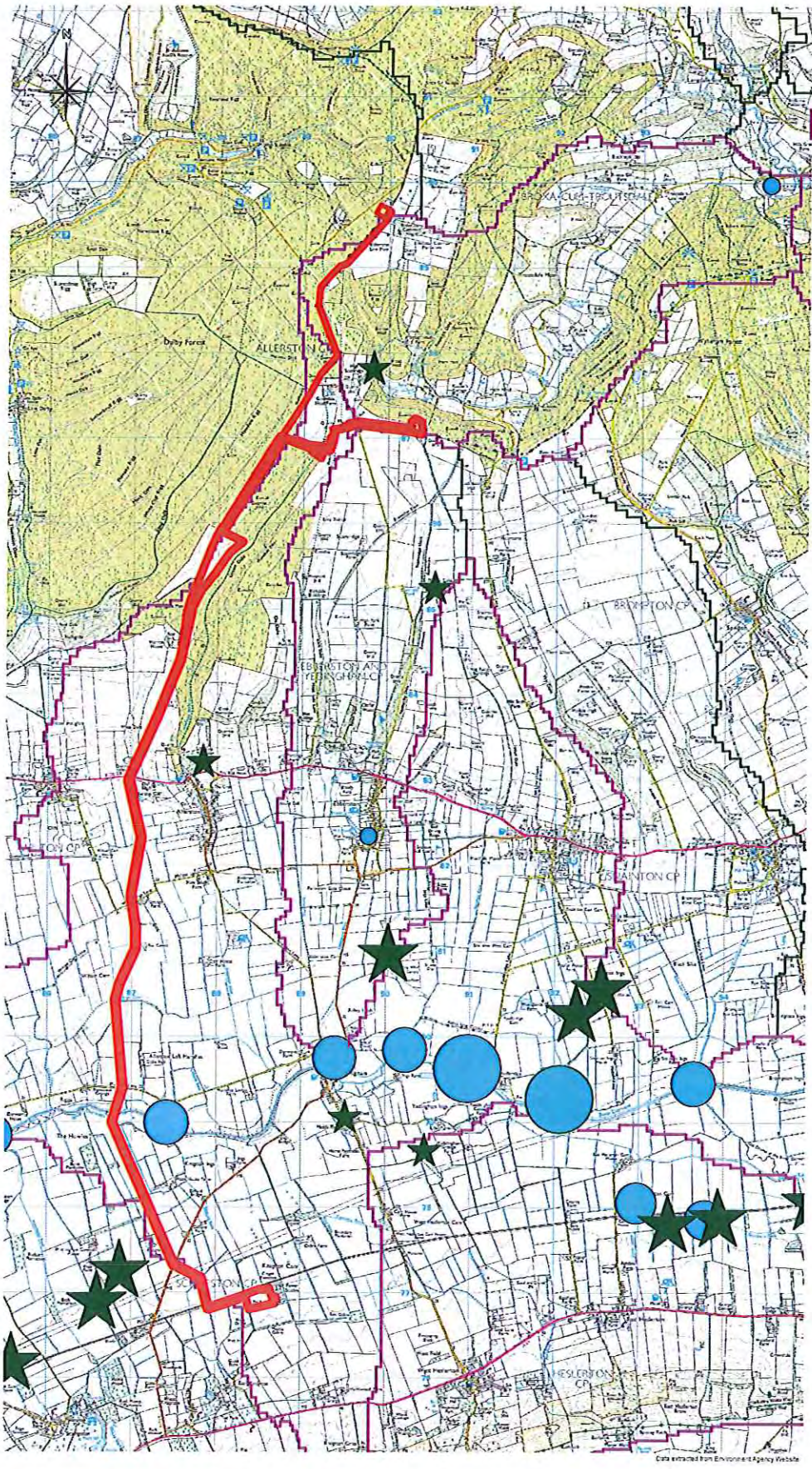
APPENDIX 2

FIGURES REFERRED TO IN TEXT




**FIGURE 4 Catchment Area Boundaries and Abstraction Points
(Combined Development)**

**FIGURE 12.2 GROUNDWATER SPECIAL PROTECTION ZONES
(Taken from ES for EM 'A' – Knaption Planning Application)**




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Key

-  Application Red Line
-  Catchment boundaries
-  Boundaries to catchment areas in which development is located

Water Abstraction from Ground Water

-  Small size of abstraction
-  Medium size of abstraction
-  Large size of abstraction

Water Abstraction from Surface Water

-  Small size of abstraction
-  Medium size of abstraction
-  Large size of abstraction

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Figure 4 - Catchment Area Boundaries & Abstraction Points (Combined development)

0 500m 1000m





Groundwater Source Protection Zones

-  Inner Zone (Zone 1)
-  Outer Zone (Zone 2)
-  Total Catchment (Zone 3)
-  Special Interest (Zone 4)

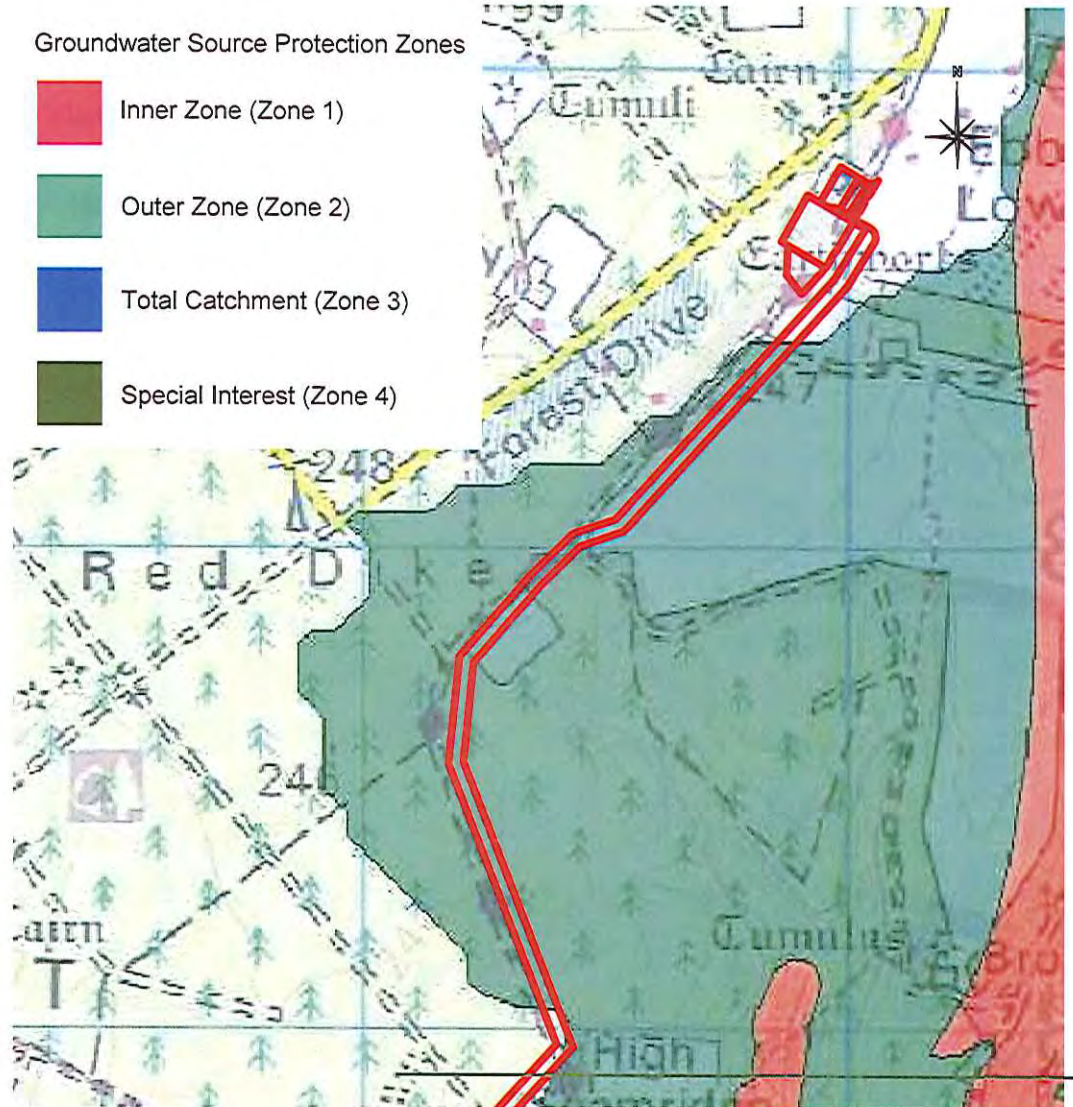


Figure 12.2 - Groundwater Special Protection Zones

