#### **Reach Setting** Eller Beck Legend > Flow Direction Eller Beck T1 Eller Beck 1 Reservoir Walkover Survey Reach mbsay Reservoir ■ Barriers to Fish Water Quality Site Weir 1 YWSL Baseline Monitoring Site Significant Flow Reduction Flow Return Point for WQ Embsay Significant Flow Beck above 2/27/15/050 WFD Waterbody onfluence with Haw Beck Weir 3 0.5 km GB104027063060 © OpenStreetMap contributors. OpenStreetMap® is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF).

# 2 10 Q50 Q95 Q95 Q95 Q95 Q95 Q95 Q95 Q95 Q999 Q99 Q99

-	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
Q <sub>s</sub> 95	1.19	0.39	67	Summer
<b>Q</b> <sub>s</sub> 99	1.19	0.39	67	Major
Q95	1.19	0.39	67	Winter
Q50	1.19	0.39	67	Major

Frequent

earth banks

**Abundant** 

low and

moderate

energy flow

Occasional

bank

reinforcement

Occasion

Significant Flow Additions/Reductions	Flow Rate (MI/d)	Abstraction / Discharge
Embsay Beck –at Embsay Tannery –Skipton 2/27/15/050	0.182	Abstraction
		•

## **Reach Setting Information:**

The superficial geology of this reach is composed predominantly of glacial till. Soil types along the reach are composed predominantly of slowly permeable, seasonally wet acid loamy and clayey soils. Surrounding land use is predominantly improved grassland, suburban/urban land use between 0.9km and 1.5km downstream as the channel flows through Embsay and improved grassland to the end of the reach.

	Supplementary Information
Catchment Area at Assessment Point	2.8km <sup>2</sup>
Mean Slope Gradient	1.12°
Length of Reach	2.9km
<b>Additional Catchment Area</b>	8.1km <sup>2</sup>
Upstream Reach	N/A
Downstream Reach	Eller Beck 1

# **River Habitats**



Frequent riparian trees
Abundant

Steep earth
Occasional

roots
Abundant
low to
medium
energy flow

riparian grassland

Occasional riparian trees

Dominant cobble substrate

Abundant

cobble substrate

Riffle-pool sequence

# River Water Quality

There are no significant water quality pressures associated with this reach

One water quality monitoring location is present in Embsay Beck Above Confluence with Haw Bk (NE49400334). The average pH between 2014-2023 was 8.02 with a maximum temperature of 16.3°C for the same period.

# types sequence in-channel structures One water quality monitoring Confluence with Haw Bk (N was 8.02 with a maximum to

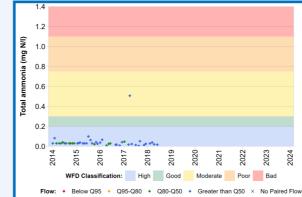
**River Flow Regime** 

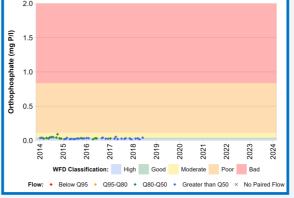
YorkshireWater

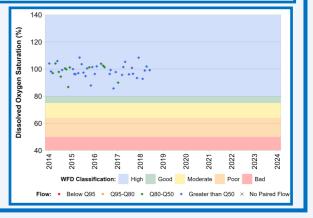


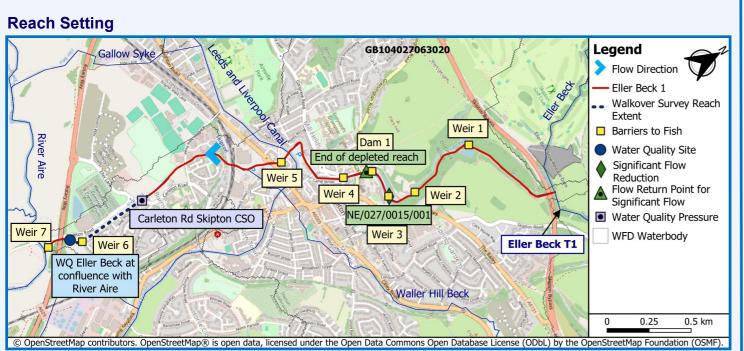
Figure A4.1

Eller Beck T1:









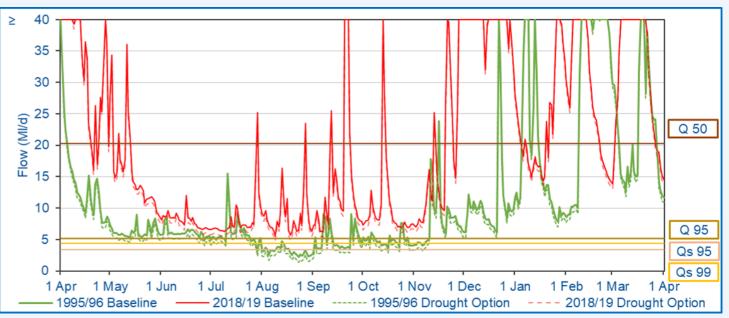
# **Reach Setting Information:**

The superficial geology is composed of alluvium along with glacial tills surrounding the reach. Extensive river terrace deposits and alluvium are located around the confluence with the River Aire. Soil types along the reach are composed predominantly of slowly permeable, seasonally wet acid loamy and clayey soils with some loamy and clayey floodplain soils around the confluence with the River Aire .Suburban/urban land is dominant as the channel flows through Skipton (1.2-2km downstream)

	Supplementary Information
Catchment Area at Assessment Point	23.5km <sup>2</sup>
Mean Slope Gradient	0.6°
Length of Reach	3.9km
Additional Catchment Area	9.8km²
Upstream Reach	Eller Beck T1
Downstream Reach	N/A

Occasional

# River Flow Regime



-	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
Q <sub>s</sub> 95	4.3	3.5	18.3	Summer
Q <sub>s</sub> 99	3.3	2.5	23.8	Moderate
Q95	5.2	4.4	15.3	Winter
Q50	20.3	19.5	3.9	Minor

Significant Flow Additions/Reductions	Flow Rate (MI/d)	Abstraction / Discharge
Skipton Corn Mill, Skipton NE/027/0015/001	38.88	Abstraction (Flow returned ~200m downstream)

# **River Habitats**

Abundant riparian shading

Dominant cobble substrate

Dominant low and moderate energy flows





# **River Water Quality**

Significant Water Quality Pressures

Carleton Road Skipton CSO YWUCD2/103 1 Permit Conditions

Intermittent discharge

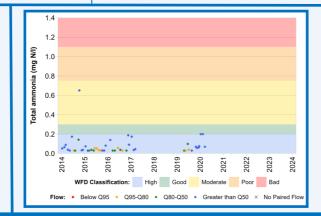
Two water quality monitoring points are present in Eller Beck 1. For this assessment the second point in the reach, Eller Beck at Confluence with River Aire (NE49400308), was used due having a greater sampling period. The average pH between 2014-2023 was 8.2 with a maximum temperature of 17.6°C for the same period.

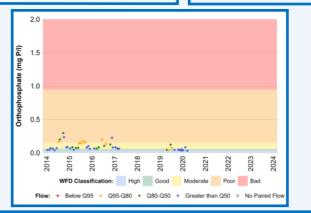


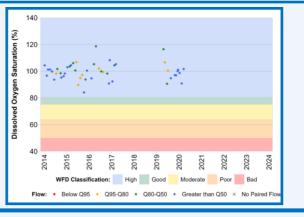


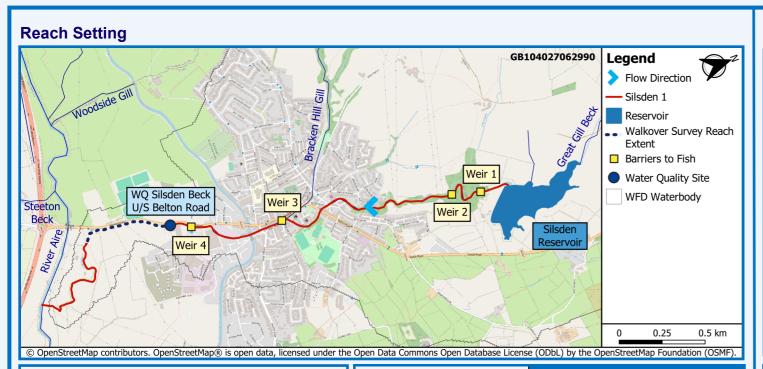
Figure A4.2

Eller Beck 1







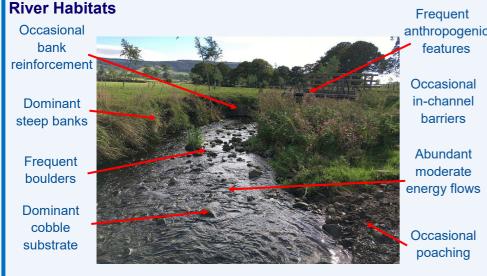


# 

-	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
Q <sub>s</sub> 95	2.41	0.80	67	Summer
Q <sub>s</sub> 99	2.41	0.80	67	Major
Q95	2.41	0.80	67	Winter
Q50	2.41	0.80	67	Major

There are no significant flow additions/ reductions associated with this reach

#### **Supplementary Information Reach Setting Information: Catchment Area at** The superficial geology is predominantly alluvium with 7.6km<sup>2</sup> extensive alluvial fan deposits and alluvium at the end of **Assessment Point** the reach around the confluence with the River Aire. Soil 1.5° **Mean Slope Gradient** types in the reach are composed predominantly of slowly Length of Reach 3.0km permeable, seasonally wet acid loamy and clayey soils with some loamy and clayey floodplain soils around the **Additional Catchment Area** 6.0km<sup>2</sup> confluence with the River Aire. Suburban/urban land use is N/A **Upstream Reach** observed between 0.5km and 2.0km downstream as the channel passes through Silsden. **Downstream Reach** N/A





# **River Water Quality**

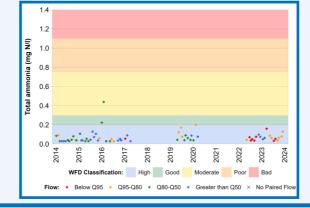
There are no significant water quality pressures associated with this reach

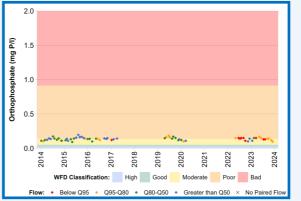
Two water quality monitoring sites are present in Silsden Beck 1. For this assessment the most upstream site in the reach, Silsden Beck U/S Belton Road (NE49400835), was used due to its position in the reach and its data quality. The average pH between 2014-2023 was 8.2 with a maximum temperature of 18.3°C for the same period.

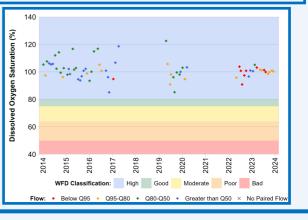


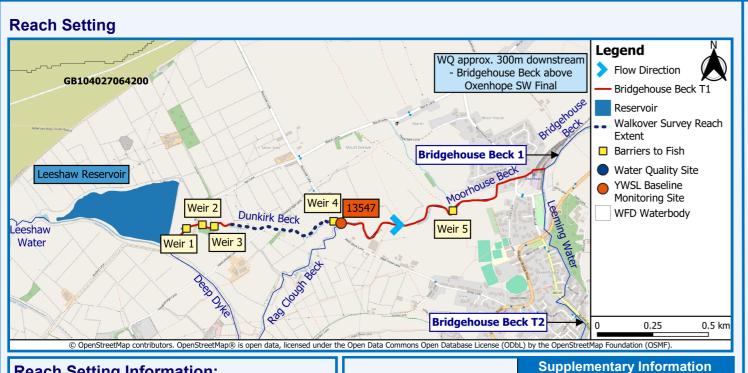


Figure A4.3
Silsden Beck 1









# **River Flow Regime** Q50 Q95 = **Qs95** = Qs99 1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep 1 Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar 1 Apr 1995/96 Baseline -2018/19 Baseline ------ 1995/96 Drought Option ---- 2018/19 Drought Option

1	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
Q <sub>s</sub> 95	2.75	0.91	67	Summer
Q <sub>s</sub> 99	2.75	0.91	67	Major
Q95	2.75	0.91	67	Winter
Q50	2.75	0.91	67	Major

There are no significant flow additions/ reductions associated with this reach

# the reach passes through Oxenhope.

**River Habitats** 

**Reach Setting Information:** 

Soil types along the reach are composed

The superficial geology is composed of alluvium

along the channel path and surrounded by glacial till.

predominantly of freely draining, slightly acid loamy

soils. There is some suburban/urban land usage as



Occasional anthropogenetic Occasional

**Catchment Area at** 

**Assessment Point** 

**Mean Slope Gradient** 

Length of Reach

**Additional Catchment Area** 

**Upstream Reach** 

**Downstream Reach** 

Flows of a range of energy **Abundant** gravel to pebble substrate

3.7km<sup>2</sup>

1.1°

2.0km

2.7km<sup>2</sup>

N/A

Bridgehouse Beck 1



# **River Water Quality**

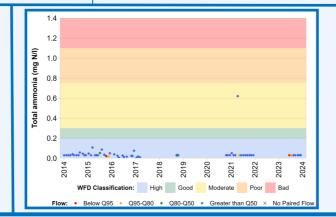
There are no significant water quality pressures associated with this reach

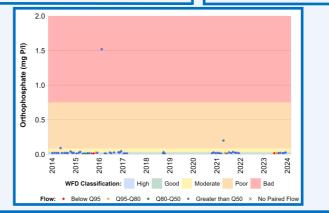
There are no water quality monitoring sites in Bridgehouse Beck T1. As such the most upstream monitoring site in the downstream reach (Bridgehouse Beck 1), Bridgehouse Beck Above Oxenhope Sw Final (NE49400075) has been used. The average pH between 2014-2023 was 7.8 with a maximum temperature of 15.4°C for the same period.

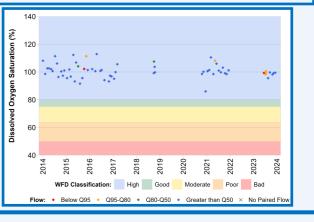




Figure A4.5 **Bridgehouse Beck T1 Physical Environment Information** 







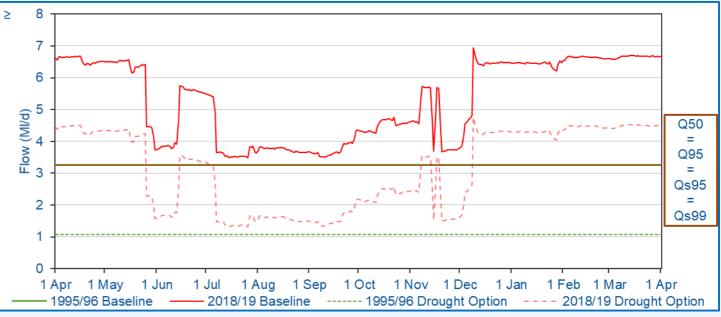


# **Reach Setting Information:**

The superficial geology is composed of alluvium along the channel path and surrounded by glacial till. Soil types along the reach are composed predominantly of slowly permeable, seasonally wet acid loamy and clayey soils. Surrounding land use is predominantly rough pasture and suburban/urban land use, particularly as the channel flows through the Oxenhope.

	Supplementary Information
Catchment Area at Assessment Point	4.5km <sup>2</sup>
Mean Slope Gradient	1.4°
Length of Reach	1.7km
<b>Additional Catchment Area</b>	3.9km <sup>2</sup>
Upstream Reach	N/A
Downstream Reach	Bridgehouse Beck 1

# **River Flow Regime**



-	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
Q <sub>s</sub> 95	3.25	1.07	67	Summer
<b>Q</b> <sub>s</sub> 99	3.25	1.07	67	Major
Q95	3.25	1.07	67	Winter
Q50	3.25	1.07	67	Major

Occasional

There are no significant flow additions/ reductions associated with this reach

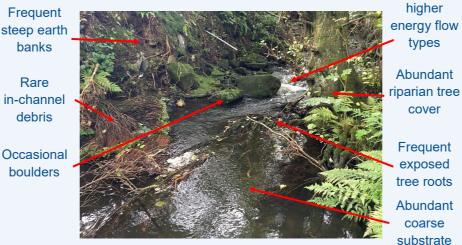
## **River Habitats**



Abundant bebble and cobble substrate

Dominant low and moderate energy flows

features



**River Water Quality** 

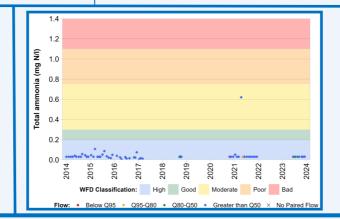
There are no significant water quality pressures associated with this reach

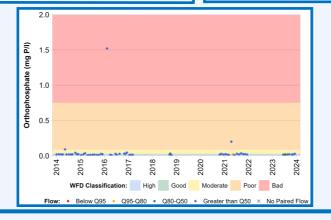
There are no water quality monitoring sites in Bridgehouse Beck T2. As such the most upstream monitoring site in the downstream reach (Bridgehouse Beck 1), Bridgehouse Beck Above Oxenhope Sw Final (NE49400075) has been used. The average pH between 2014-2023 was 7.8 with a maximum temperature of 15.4°C for the same period.

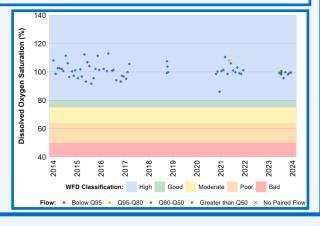




Figure A4.7 **Bridgehouse Beck T2 Physical Environment Information** 









# 

-	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
Q <sub>s</sub> 95	7.82	3.80	51	Summer
Q <sub>s</sub> 99	6.87	2.85	58	Major
Q95	8.28	4.26	48	Winter
Q50	15.6	11.6	26	Major

Significant Flow Additions/Reductions	Flow Rate (MI/d)	Abstraction Discharge
Oxenhope WwTW E721(SS)	0.91	Discharge

# Reach Setting Information:

The superficial geology is composed of alluvium along the channel path and surrounded by glacial till. Soil types along the reach are composed predominantly of slowly permeable, seasonally wet acid loamy and clayey soils. Surrounding land use is predominantly rough pasture and improved grassland with suburban/urban land use dominating as the channel flows through Haworth.

	Supplementary Information	
Catchment Area at Assessment Point	14.8km <sup>2</sup>	
Mean Slope Gradient	0.7°	
Length of Reach	3.2km	
<b>Additional Catchment Area</b>	4.3km <sup>2</sup>	
Upstream Reach	Bridgehouse Beck T1,T2	
Downstream Reach	River Worth 2	

### **River Habitats**

Abundant riparian shading

Dominant steep earth banks

Dominant low energy



#### Frequent Abundant exposed tree riparian trees roots and shading Occasional reinforced Abundant banks earth banks Abundant low **Dominant** to moderate cobble energy flows substrate Occasional finer Frequent marginal boulders substrate

# **River Water Quality**

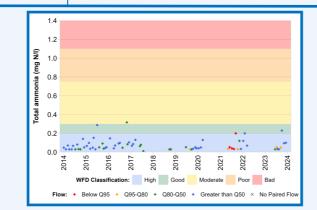
Significant Water Quality Pressures	Permit Conditions	
	0.91 MI/d DWF	
Oxenhope WwTW	1.63 Ml/d Daily Max	
E721 (SS)	11 mg/l (95 <sup>th</sup> percentile) 40mg/l (maximum) Ammonia (N)	
	50mg/l (95 <sup>th</sup> percentile) 100mg/l (maximum) BOD ATU	

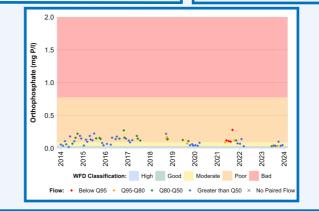
There are two water quality monitoring sites in Bridgehouse Beck 1. As the upstream site, Bridgehouse Beck Above Oxenhope Sw Final (NE-49400075), has been used to characterise Bridgehouse Beck T1 and T2 assessments the next downstream site, Bridgehouse Beck Above Conf With R.Worth (NE49400074), has been used. The average pH between 2014-2023 was 7.9 with a maximum temperature of 15.7°C for the same period.

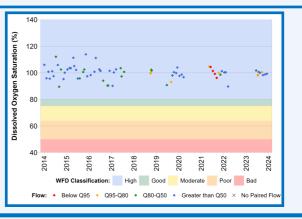


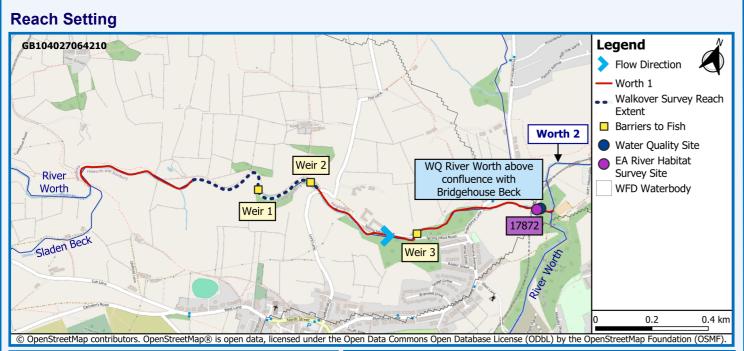


Figure A4.9
Bridgehouse Beck 1
Physical Environment Information









# **Reach Setting Information:**

The superficial geology of the reach is predominantly glacial till with alluvium underlying the reach and scattered glaciofluvial deposits. Soil types along the reach are composed predominantly of slowly permeable, seasonally wet acid loamy and clayey soils. Surrounding land use is predominantly improved grassland with some rough pasture. Suburban/urban land use increases slightly towards the end of the reach prior to the confluence with Bridgehouse Beck.

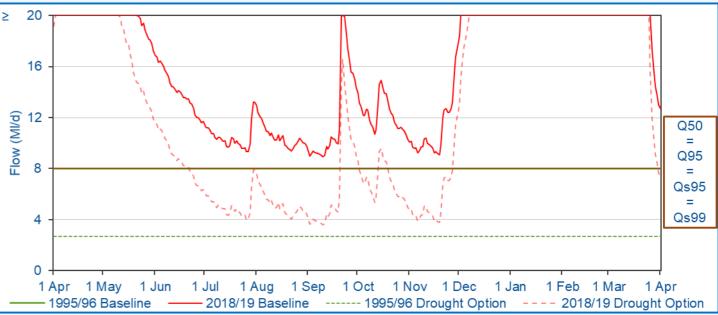
	Supplementary Information
Catchment Area at Assessment Point	19.5km <sup>2</sup>
Mean Slope Gradient	0.6°
Length of Reach	2.0km
Additional Catchment Area	4.3km <sup>2</sup>
Upstream Reach	N/A
Downstream Reach	River Worth 2

**Abundant** 

Rare woody

debris

# **River Flow Regime**



-	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
<b>Q</b> <sub>s</sub> 95	8.00	2.67	67	Summer
<b>Q</b> <sub>s</sub> 99	8.00	2.67	67	Major
Q95	8.00	2.67	67	Winter
Q50	8.00	2.67	67	Major

There are no significant flow additions/ reductions associated with this reach

### **River Habitats**

Dominant riparian trees and shading

Abundant low and moderate energy flows

Occasional boulders

Occasional

Abundant steep earth banks

Dominant coarse substrate

Frequent exposed tree

Occasional bank reinforcement low energy flows

Frequent exposed tree roots

Occasional in-channel barriers

steep banks, occasional eroding banks

**Abundant** 

Occasional bars

Rare poaching

Abundant coarse substrate

# **River Water Quality**

There are no significant water quality pressures associated with this reach

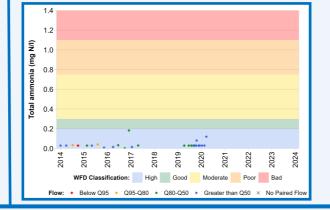
There is one water quality monitoring sites in Worth 1: River Worth Above Conf Bridgehouse Beck (NE49400825). The average pH between 2014-2023 was 7.8 with a maximum temperature of 16.7°C for the same period.

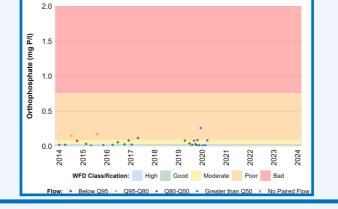


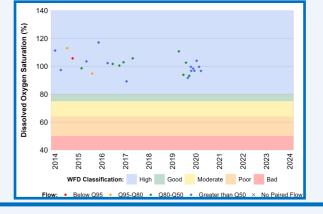


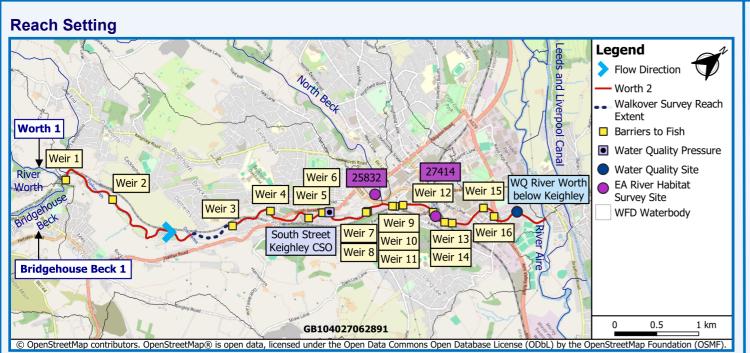
Figure A4.10
River Worth 1

margins









2 80 70 60 60 40 40 30 20 10 0 95 Q 95 Qs 95 Qs 99 1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep 1 Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar 1 Apr ————————————————————————————————————	River Flow Regime	
	20 10 1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep	Q 95 Qs 95 Qs 99  1 Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar 1 Apr

-	Reference Conditions (MI/d)	Drought Plan Conditions (MI/d)	% Reduction	Impact
<b>Q</b> <sub>s</sub> 95	18.6	9.21	50	Summer
<b>Q</b> <sub>s</sub> 99	16.2	6.87	58	Major
Q95	19.6	10.2	48	Winter
Q50	34.8	25.4	27	Major

There are no significant flow additions/ reductions associated with this reach

# **River Habitats**

**Reach Setting Information:** 

channel flows through Keighley.

The superficial geology is composed of alluvium along the

alluvial fan deposits are located around the confluence with

the River Aire at Keighley. Soil types along the reach are

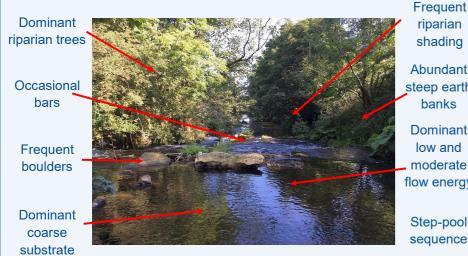
composed predominantly of slowly permeable, seasonally

wet acid loamy and clayey soils with some freely draining,

slightly acid loamy soils around the confluence with the

River Aire. Suburban/urban land use increases as the

channel path and surrounded by glacial till. Extensive



Frequent riparian shading

**Catchment Area at** 

**Assessment Point** 

**Mean Slope Gradient** 

Length of Reach

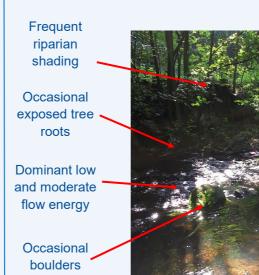
**Additional Catchment Area** 

**Upstream Reach** 

**Downstream Reach** 

steep earth banks **Dominant** low and moderate flow energy

Step-pool sequence



Supplementary Information

42.9km<sup>2</sup>

0.58°

7.2km

31.1km<sup>2</sup>

Bridgehouse Beck 1, Worth 1

N/A

**Abundant** steep earth banks

Frequent reinforced banks

**Dominant** coarse substrate

# **River Water Quality**

Significant Water Quality Pressures	Permit Conditions
South Street Keighley CSO WRA8110 A1	Intermittent discharge
Oxenhope WwTW	0.91 MI/d DWF
E721 (SS)	1.63 Ml/d Daily Max
(continued risk from discharge in Bridgehouse	11 mg/l (95 <sup>th</sup> percentile) 40mg/l (maximum) Ammonia (N)
Beck 1)	50mg/l (95 <sup>th</sup> percentile) 100mg/l (maximum) BOD ATU

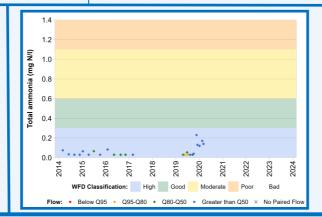
There is one water quality monitoring sites in Worth 2. As such the location, River Worth Below Keighley (NE49400828) has been used. The average pH between 2014-2023 was 8.1 with a maximum temperature of 16.3°C for the same period.

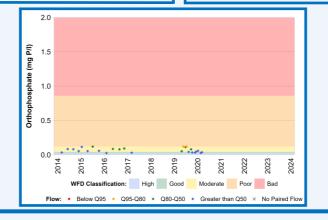


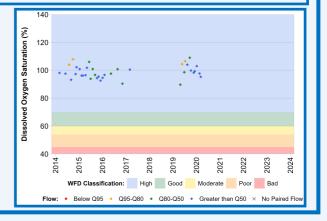


Figure A4.12

**River Worth 2** 







# **Reach Setting** Legend WQ approx. 3.4km downstrear - Harden Beck At Harden Flow Direction Denholme Beck 1 Reservoirs Walkover Survey Reach Extent ■ Barriers to Fish YWSL Baseline Monitoring Site WFD Waterbody GB104027062870 0.5 kn © OpenStreetMap contributors. OpenStreetMap® is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF).

#### 1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep 1 Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar 1 Apr -2018/19 Baseline ----- 1995/96 Drought Option ---- 2018/19 Drought Option 1995/96 Baseline -Reference **Drought Plan Conditions Conditions Impact** Reduction (MI/d) (MI/d) Q<sub>s</sub>95 1.80 1.20 33 Summer Major Q<sub>2</sub>99 1.80 1.20 33 Q95 1.20 33 1.80 Winter Major Q50 1.20 33 1.80

**River Flow Regime** 

# There are no significant flow additions/ reductions associated with this reach

Q50

Q95

= Qs95

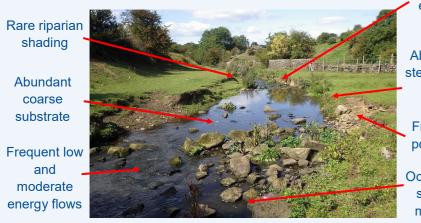
Qs99

# **Reach Setting Information:**

The superficial geology is limited with only glacial till and some hummocky glacial deposits identified around the reservoir. Soils in the reservoir catchment are predominantly composed of a mixture of freely draining, slightly acid loamy soils around the reservoir and slowly permeable, wet, very acid upland soils in the remainder of the catchment. Urbanisation is very limited with a small group of houses located at ~0.3km and a farm located at -0.8km downstream.

	Supplementary Information
Catchment Area at Assessment Point	8.0km <sup>2</sup>
Mean Slope Gradient	0.7°
Length of Reach	1.6km
<b>Additional Catchment Area</b>	1.3km <sup>2</sup>
Upstream Reach	N/A
Downstream Reach	N/A

# **River Habitats**

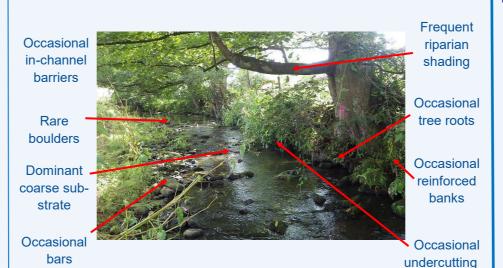


Occasional eroding

Abundant steep earth banks

Frequent poaching

Occasional shallow margins



# **River Water Quality**

There are no significant water quality pressures associated with this reach

There are no water quality monitoring points in Denholme Beck 1, as such the next location in the downstream reach (Harden Beck 1), Harden Beck at Harden (NE49400457), has been used. The average pH between 2014-2023 was 8.0 with a maximum temperature of 16.9°C for the same period.





Figure A4.13

**Denholme Beck 1** 

