



# Redcar & Cleveland Update on Friday 6<sup>th</sup> September 2013 Flooding

Redcar & Cleveland Borough Council and  
Northumbrian Water Ltd

Presentation 11<sup>th</sup> December 2014

# How The Extreme Weather Event Affected The Borough



- Flooding was experienced across the Borough including properties and businesses in
  - Redcar
  - New Marske
  - Guisborough
  - Yearby Village
  - Skinningrove
  - Dormanstown
  - Marske
  - North Skelton
  - Charltons
  - Loftus
  - Saltburn

It also impacted on much of the strategic road network.

# **Actions and investigations so far:**

- **Redcar:**

- **April 2014 Redcar Surface Water Management Plan (SWMP) produced options for flood water storage at Plantation Road / Crestwood Road and Limerick Road, Dormanstown.**
- **October 2014 Fleet Beck, hydraulic model produced.**
- **St Joseph's Court, option investigated to divert flood water to field adjacent to the estate. Sandbag store and sandbags provided.**
- **Gap in mound along south side of Plantation filled in.**
- **Surcharging section of West Dyke Culvert exposed and repairs undertaken.**
- **Proposal to undertake improvements to culvert as part of development of Redcar EDC site, Corporation Road.**
- **Result of investigations shared with SSI and TATA to identify improvements and maintenance on their land.**





## **Actions and investigations so far:**

- **Greater Eston:**
  - **SWMP investigated flooding at Whale Hill and Flatts Lane / Cross Beck / Church Lane, produced options for flood water storage and culvert upsizing.**
  - **Tees Dock Road highway drainage hydraulic model produced, report due early 2015.**
  - **Tees Dock Road, abandoned water main in Kinkerdale Beck removed.**
  - **Flood Management Plan being developed by RCBC & PD Ports.**
  - **PD Ports have purchased pumps to deploy in adverse weather.**
  - **Culvert jetted to remove ochre at Granwood Road area.**



## **Actions and investigations so far:**

- **Guisborough Area:**

- **SWMP produced for Guisborough and surrounding area.**
- **Options for Hutton Lane culvert diversion and upstream storage, upsizing of culvert and flood storage at Charltons.**
- **Condition survey of culverted watercourse at Lucia Road area completed.**
- **Natural Flood management being investigated in conjunction with Tees Rivers Trust.**
- **Community engagement in Charltons to develop Community Flood Action Plan.**

# **Actions and investigations so far:**

- **Marske, New Marske and Yearby:**
  - **Draft SWMP received December 2014.**
  - **Investigated flooding at the three locations and produced options for flood water storage on Long Beck, playing fields above New Marske and former NWL reservoir west of Longbeck Lane.**
  - **Culvert south of Cat Flatt Lane investigated and footpath alterations agreed to reduce flooding. Joint investigation with Network Rail to identify possible flood alleviation from rail crossing ongoing.**
  - **Sewer repairs, highway drainage improvements and footpath alterations to reduce flooding in New Marske, further works ongoing at present.**
  - **Community engagement in New Marske planned to develop Community Flood Action Plan.**
  - **Ditching work in Yearby and drainage cleansed.**





## **Actions and investigations so far:**

- **North Skelton:**
  - **Consultant appointed to undertake flood investigation which includes inspection and CCTV survey of drainage systems and identification of possible solutions.**
  - **Meeting has been held to discuss and demonstrate property level flood protection measures.**
  - **Community engagement has taken place and RCBC are working with the community to develop a Community Flood Action Plan.**
  - **Ward Members have purchased 200 Aqua-Sacs as a resource for the community to use in any future flood events.**



## **Actions and investigations so far:**

### **● Loftus:**

- Proposals to repair damaged bridge on Gaskell Lane developed, final solution dependant on NWL works to divert sewer.**
- Arrangement with Kirklevington Prison being developed to remove debris from Middle Gill.**
- Work to replace Footbridge over Middle Gill on Public Right of Way in progress.**
- Removal of bridge debris from watercourse has been approved and work is currently being planned.**

### **● Skinningrove**

- Mill Lane bridge repaired.**
- Jetty and coastal defence scheme in process of being put out to tender.**



# Actions and investigations so far:



## ● Saltburn:

- Joint investigations of drainage systems have been undertaken by NWL and RCBC and repairs carried out.
- CCTV surveys and cleansing of culverted watercourse in Princess Road / The Crescent have been undertaken.
- Repairs carried out to culvert on Guisborough Road / Marske Mill Lane.
- Camfields retaining wall to be repointed in December.
- Works are planned for Saltburn Valley Gardens / Skelton Beck and Millholme Beck to remove brash and logs from watercourse.
- Scheme agreed to repair & strengthen forest halt beck sides and realign beck.
- Saltburn Road bridge debris and sand to be removed from watercourse.

# Future Actions



## Redcar

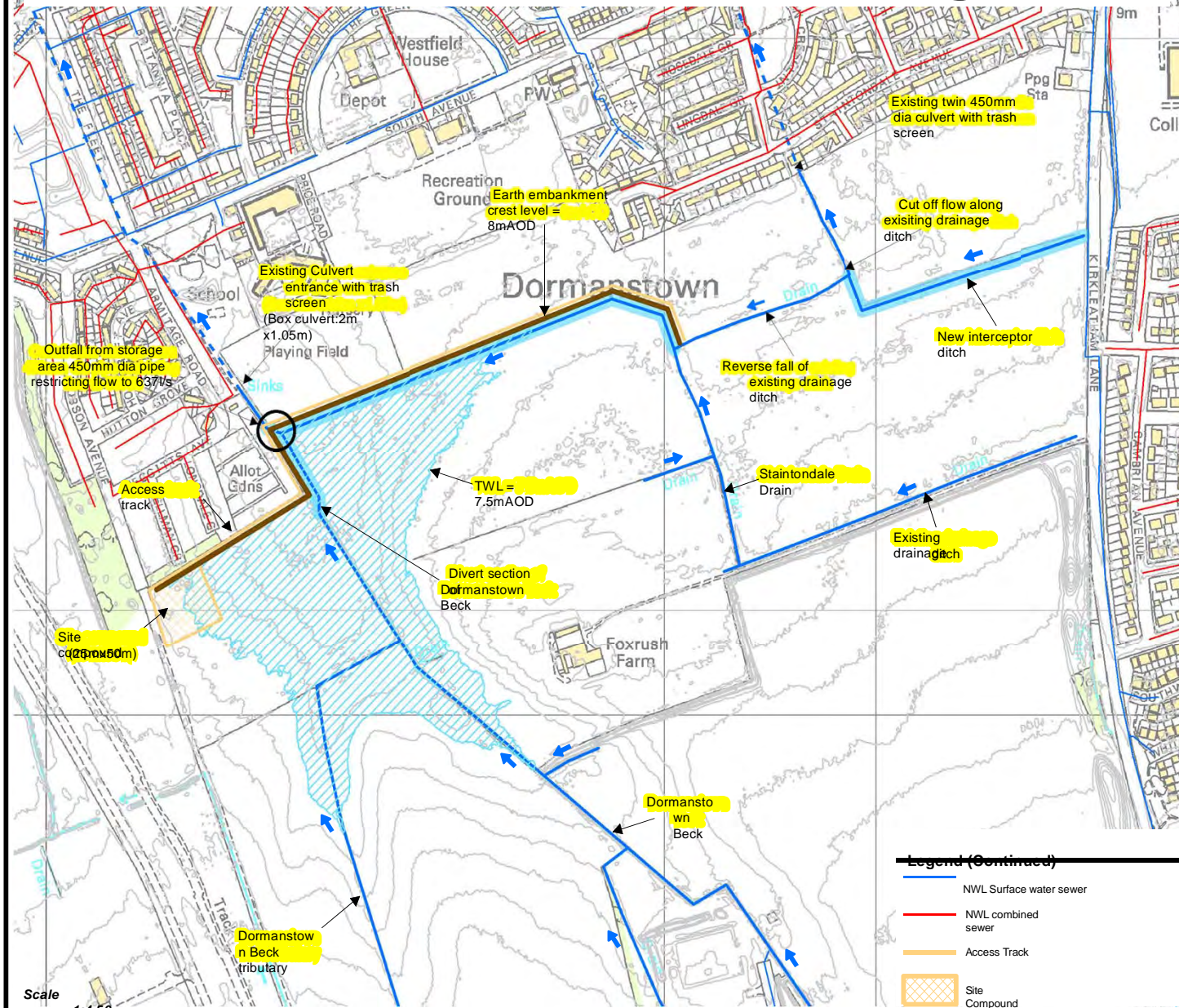
- **Re-grading of The Fleet to remove reverse gradient which is hydraulically very poor and modification of several structures which currently have perched invert levels which will tend to raise upstream water levels.**
- **There are two possible options at present for diverting The Fleet in a northerly direction direct to the North Sea, no feasibility has been undertaken on these options yet.**
- **St Josephs Court Improvement Option.**
- **Dormanstown Flood Storage Area.**
- **Roger Dyke Flood Storage Area.**
- **Further modelling study of West Dyke Culvert is required to aid in developing flood alleviation options including storage.**







# Dormanstown Flood Storage

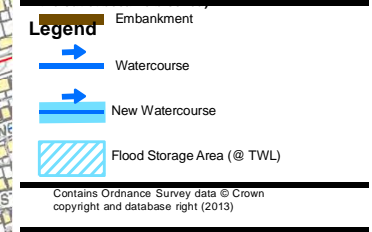


**Notes**

1. The location of foul sewers, surface water sewers, combined sewers shown on this drawing have been taken from Northumbrian Water Ltd's (NWL's) digital records.
2. The contours shown on this drawing are at 0.5m intervals.

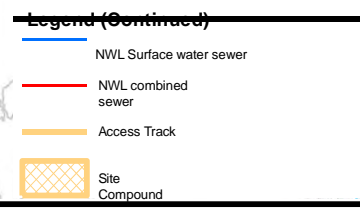
**Flood Storage Scheme - Main Details**

1. Volume of storage required to attenuate 100-year plus climate change storm = 67,177m<sup>3</sup> (assuming allowable 'on flow' of 637 l/s).
2. The blue area on this plan would provide 82,626m<sup>3</sup> at a Top Water Level (TWL) of 7.5m AOD. Refinement of the area will be required if the scheme progresses.
3. An emergency overflow would need to be provided (not shown on this drawing).
4. A penstock would also need to be provided to draw down the level in the FSA in an emergency (e.g. ...).



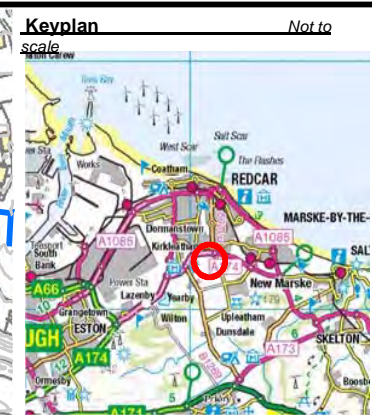
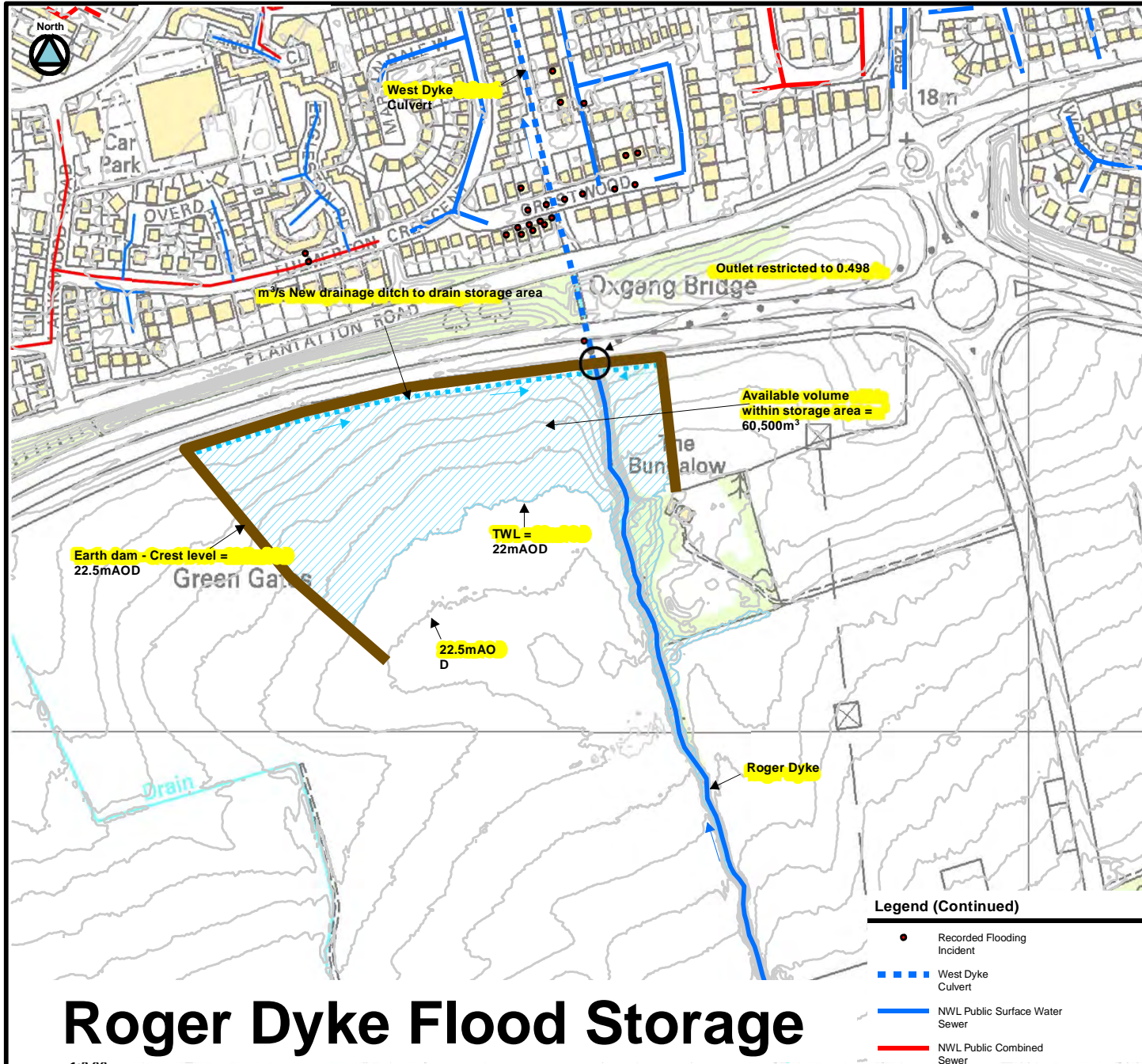
**Drng. No. 2012s5880-11**

**Dormanstown Beck, Redcar - General drainage features and scheme details**



Scale 1:1,000





**Notes**

1. The location of foul sewers, surface water sewers, combined sewers shown on this drawing have been taken from Northumbrian Water Ltd's (NWL's) digital records.
  2. The contours shown on this drawing are at 0.5m intervals.
- Flood Storage Scheme - Main Details**
1. Volume of storage required to attenuate 100-year plus climate change storm = 52,817m<sup>3</sup> (assuming allowable 'on flow' of 0.498 m<sup>3</sup>/s).
  2. The blue hatched area on this plan would provide 60,500m<sup>3</sup> at a Top Water Level (TWL) of 22mAOD. Refinement of the area will be required if the scheme progresses.
  3. An emergency overflow would need to be provided (not shown on this drawing).
  4. A penstock would also need to be provided to draw down the level in the FSA in an emergency (e.g. if the outlet became blocked).

**Legend**

- Earth Dam
- Roger Dyke
- New Drainage Ditch
- Flood Storage Area (@ TWL)

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**Legend (Continued)**

- Recorded Flooding Incident
- West Dyke Culvert
- NWL Public Surface Water Sewer
- NWL Public Combined Sewer

**Dr. No. 2012s5880-10**

Roger Dyke, Redcar - General drainage features and scheme details

# Roger Dyke Flood Storage

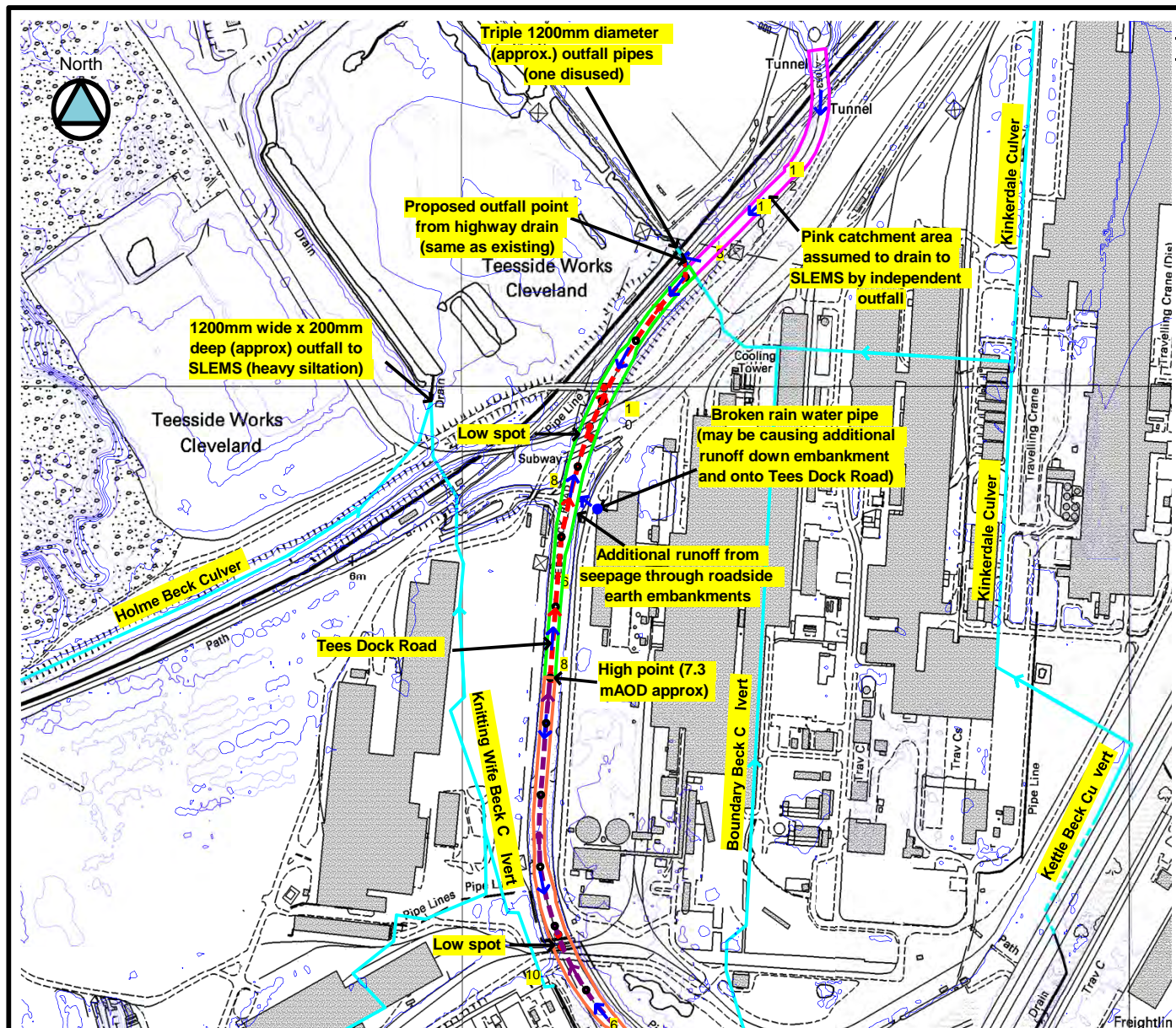
# Future Actions



## Greater Eston

- Tees Dock Road highway drain upsizing.
- Whale Hill Area flood storage.
- Flatts Lane/Cross Beck/Church Lane flood storage and culvert upsizing (Eston Area).





**KEYPLAN [Not to Scale]**



Site Location

**NOTES**

1. The contours shown on this drawing (thin blue lines) are at 2m intervals.

SLEMS = South Lackenby Environmental Management Service

**LEGEND**

- Orange Catchment Area 13,720m<sup>2</sup> (1.37ha)
- Green Catchment Area 12,540m<sup>2</sup> (1.25ha)
- Pink Catchment Area 7,767m<sup>2</sup> (0.77ha)
- Recorded Flooding Incident
- Direction of Fall/Runoff
- 600mm Diameter Main Spine Drain (approx. total length = 657m)
- 750mm Diameter Main Spine Drain (approx. total length = 640m)
- Manhole
- Chamber
- Existing Culvert

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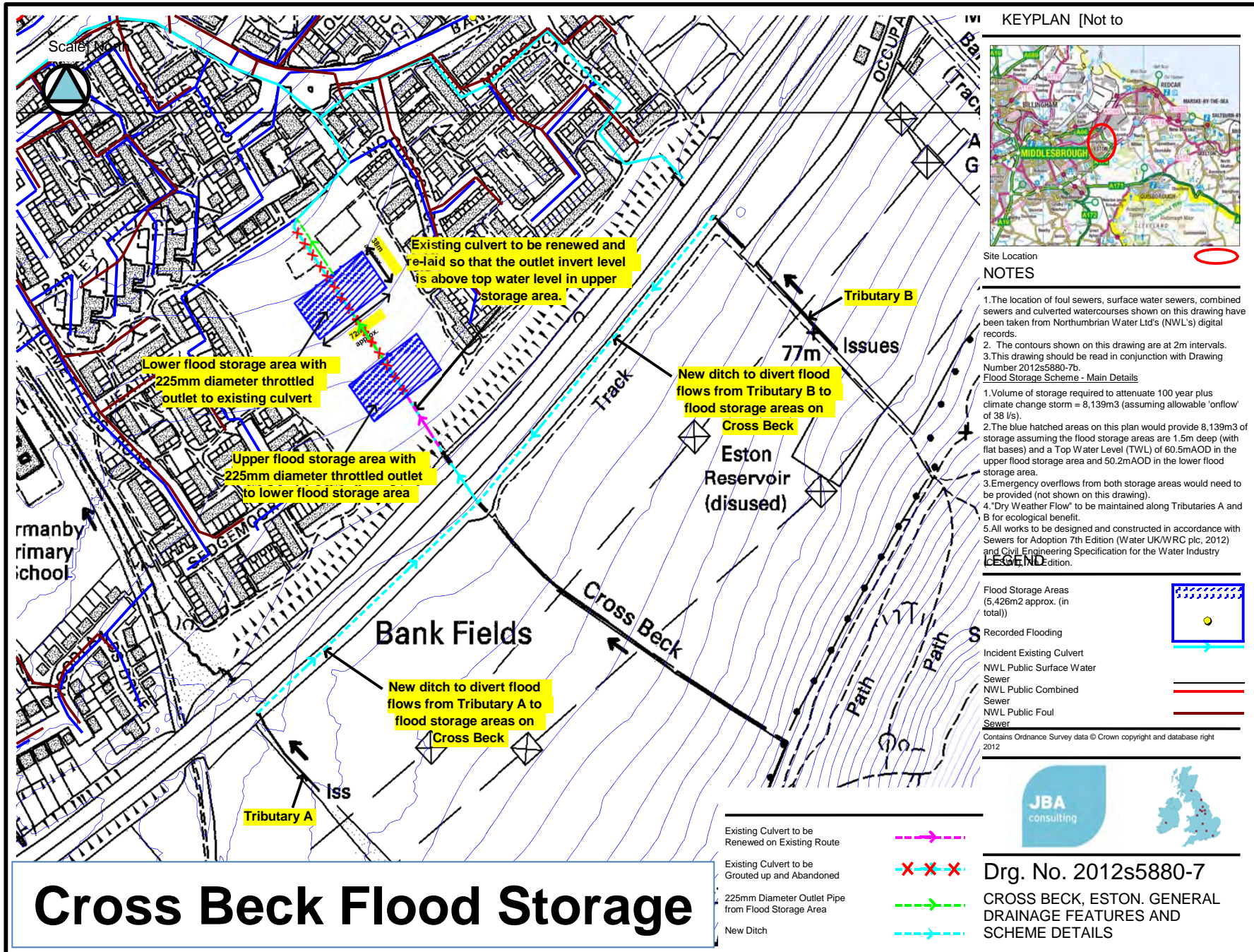


# Tees Dock Road Drainage Improvement

**Drg. No. 2012s5880-4**

**TEES DOCK ROAD, ESTON.  
GENERAL FEATURES AND  
SCHEME DETAILS**





# Cross Beck Flood Storage

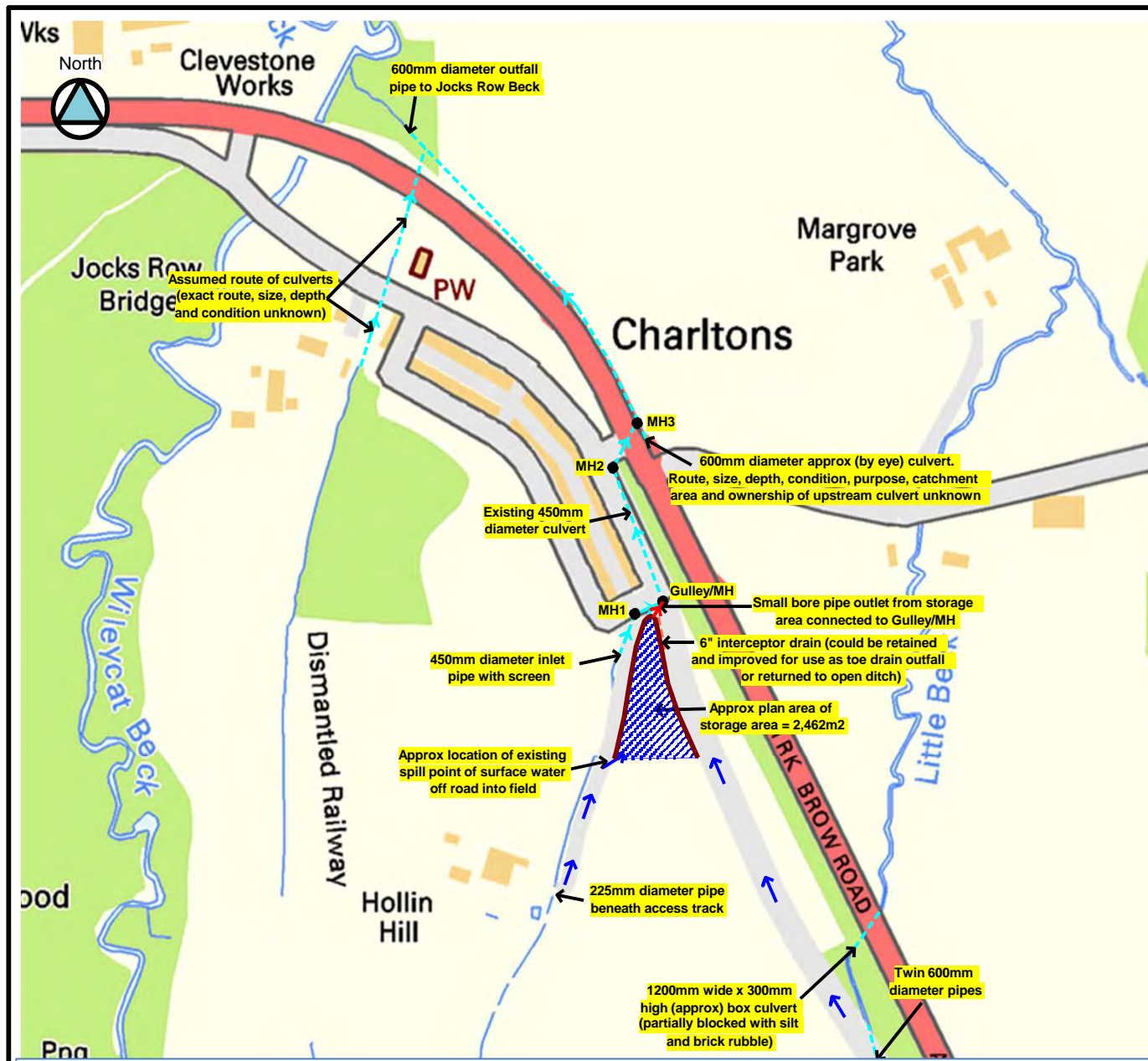


# Future Actions



## Guisborough Area

- **Charltons**
  - Remove numerous Culverts and create Fords.
  - Create Flood Storage to upland fields.
  
- **Guisborough**
  - Hutton Lane culvert diversion and upstream storage.
  - Natural Flood Management within Woodland.



**KEYPLAN [Not to Scale]**



Site Location

**NOTES**

Culvert Replacement Scheme - Main Details

1. Upsize 450mm diameter culvert to 600mm diameter between inlet to culvert and MH3 (on existing route).
2. Upsize 600mm diameter pipe to 750mm diameter between MH3 and outfall to Jocks Row Beck.
3. The need for an inlet trash screen should be properly assessed and designed in accordance with the Culvert Design and Operation Guide (Ciria, 2010).
4. All works to be constructed in accordance with Sewers for Adoption 7th Edition (Water UK/WRC plc, 2012).  
Upstream Storage Scheme - Main Details

1. Volume of storage required to attenuate 100 year plus climate change storm = 1,871m3 assuming allowable 'onflow' of 250/s.
2. Blue hatched area on this plan would need to be 800mm deep (with a flat base) to provide 1,871m3 of storage.
3. An emergency overflow from the storage area would need to be provided (not shown on this drawing).
4. Toe drains would be required along the entire length of the toe of the 'dry' side of the earth banks (with suitable outlets).

**LEGEND**

- Direction of Runoff →
- Potential Location for Flood Storage Area (Blue hatched area)
- Manhole ●
- Earth Bank (with clay core) —
- Small Bore Outlet Pipe →
- Existing 6" Interceptor - - -

Drawn Contains Ordnance Survey data © Crown copyright and database right 2012



Draw No. 2012-05890-2

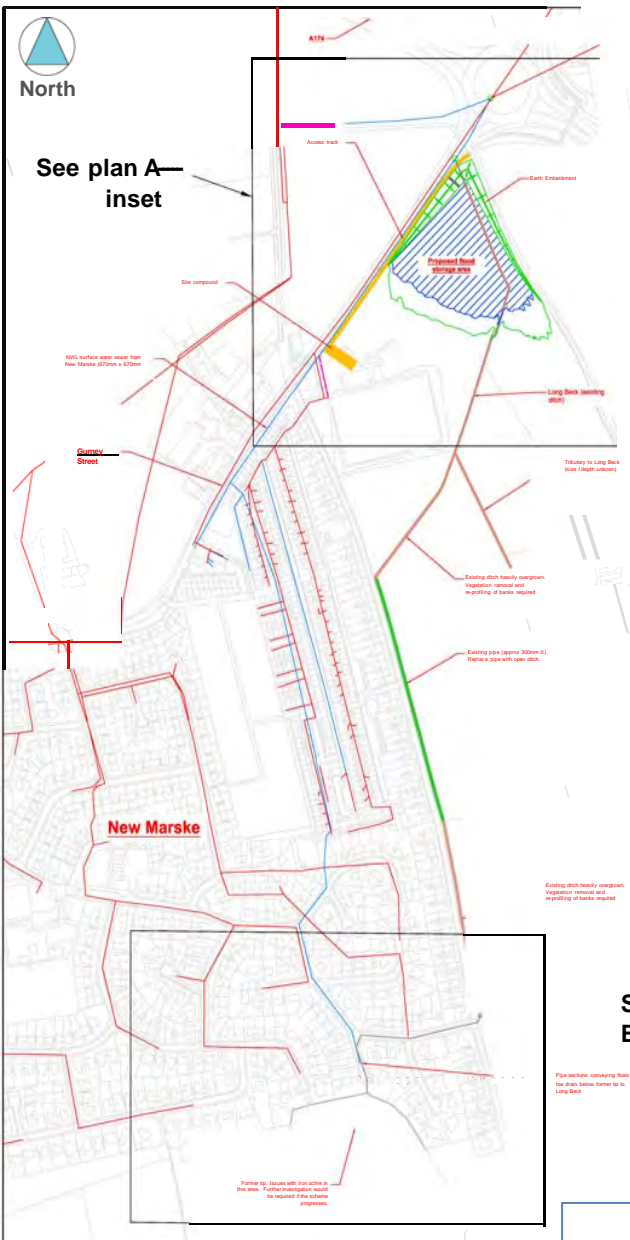
# Charltons Flood Storage & Drainage Improvements

# Future Actions

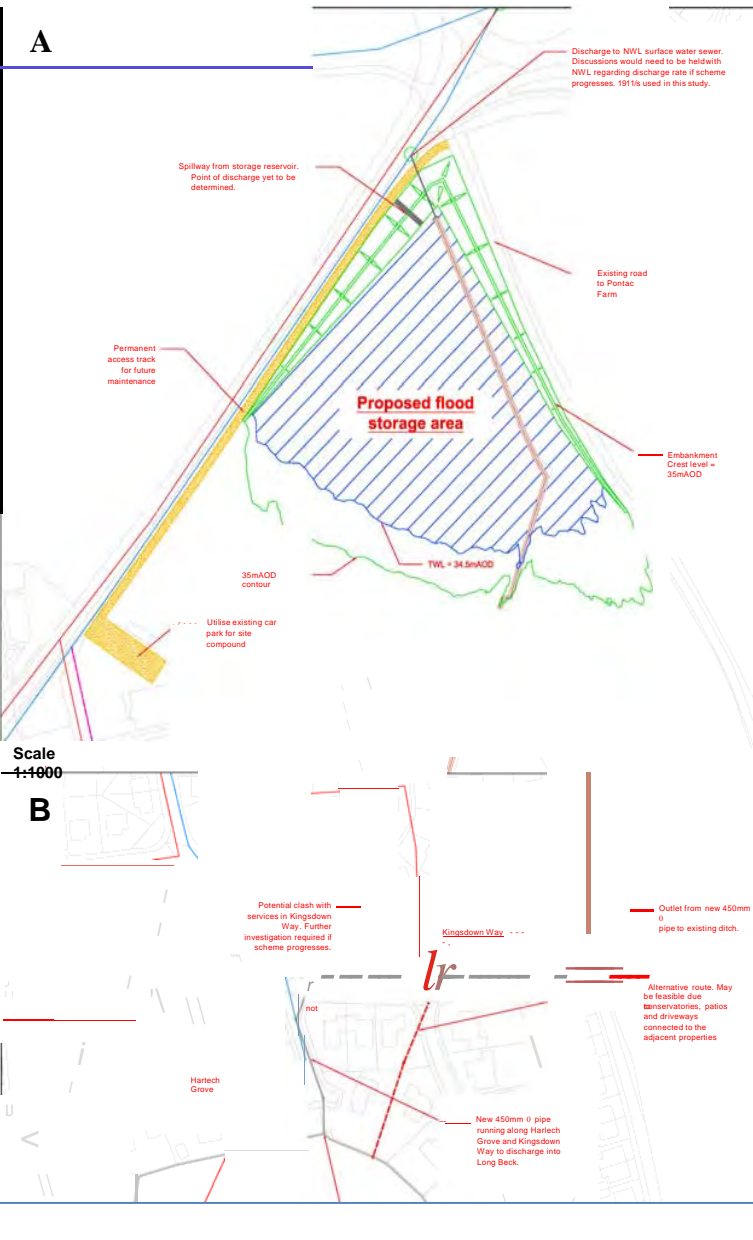


## Marske, New Marske and Yearby

- **Flood storage on Long Beck (Gurney Street).**
- **Overland runoff Storage from playing fields above New Marske.**
- **The feasibility of utilising the former NWL reservoir (located west of New Marske) as a flood storage to alleviate flooding to Yearby Village.**



Vertical datum: Ordnance Survey datum at mean tide level (DIN 45, 201461144-03)  
 Horizontal datum: OS datum (not compatible with NWL sewer files. Further investigations required if scheme progresses.)



- General Notes**
- The location of foul sewers, surface water sewers and combined sewers shown on this drawing have been taken from Northumbrian Water Ltd's (NWL's) digital records.
  - The blue hatched areas on this plan would provide 20,850m<sup>3</sup> at a top water level of 34.5m AOD. Refinement of the areas will be required if the scheme progresses.
  - The emergency spillway on this plan is for diagrammatic purposes only. An emergency penstock would also need to be provided to draw down the level in the reservoir in an emergency (e.g. if the outlet became blocked).
  - All works to be constructed in general accordance with Civil Engineering Specification for the Water Industry (CESWI) 7th edition.



North

**Legend**

- NWL Public Combined Sewer
- NWL Public Surface Water Sewer
- NWL Combined Sewer

**Overlays**

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No.	Modifications	Date	Drawn	Designed	Checked	Approved

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**REDCAR AND CLEVELAND BOROUGH COUNCIL**  
**MARKE, NEW MARKE AND YEABRY SWMP**  
**LONG BECK FLOOD STORAGE SCHEME**

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Scale	As Shown @ A 1	Drawn	24/10/2014
Checked	D C Stark	24/10/2014	
Approved	T D E Sherwood	24/10/2014	

Digital File: 25111120

Drawing Number: 142014s144-Long\_Beck\_Flood\_Scheme

Status: 1 of 1 DRAFT

# Longbeck Flood Storage





# Future Actions

## North Skelton



- Preliminary investigation of flooding problems.
- Further CCTV survey works required.
- Ongoing consultation with Tees Components Ltd.
- Interim report to RCBC in January 2015.

# North Skelton Study



**General Notes**

- CCTV Survey undertaken by Lanes for Drains Ltd on 23 September 2014. The survey was supervised by Gavin Hodson of L&A Consulting Ltd.

**Detail Plan A**

**Scale 1:250**

**Legend**

- CCTV Survey of culvert complete
- No CCTV of culvert

Rev.	Modifications	Date	Drawn	Designed	Checked	Approved
	Scale: 1:250 Sheet No: 001/01 North Yorkshire YO23 3AA United Kingdom					

for  
**REDCAR AND CLEVELAND BOROUGH COUNCIL**

**NORTH SKELTON FLOOD INVESTIGATION  
CCTV SURVEY OBSERVATIONS**

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Scale:	As Shown @ A1	Drawn:	GHODSON	201 120
Digital File Name:	2014s1221_North_Skelton_CCTV_001.dwg	Designed:	GHODSON	14 201
Drawing Number:	2014s1221-06	Sheet No.:	14	120
		Approved:	DSTARK	14 201
		Statu		120

1:101 **Drawn**

Scale 1:100  
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## Future Actions

### Loftus & Skinningrove

- **Skinningrove**

- Jetty and coastal defence scheme starting 2015.

- **Loftus**

- Gaskell Lane Bridge Repairs.
- Natural Flood Management South of Rail line in Loftus & Rosecroft Woods.



# Future Actions



## Saltburn

- **Saltburn Valley Gardens / Skelton Beck and Millholme Beck clean up and improvement scheme.**
- **Natural Flood Management Skelton Beck.**



**Any questions?**

**this is Redcar & Cleveland**