



NETWORK RAIL





## Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561

		<p align="center"><b>NETWORK RAIL</b></p> <p align="center"><b>Retaining Wall Detailed Examination Report</b></p>										
ELR: KNE1		Contract Mileage: 004m 0240yds 10.91chs						Struc. Ref: 200/561				
Examination Type: Retaining Wall Detailed				NR ID: 11009030		Exam Date: 19-Apr-2019						
Area: Scotland East				BRS: 0		OS Ref: NS92858723						
Structure Name: Kincardine on Forth				Type: WD		Exam ID: 2940107						
Route: Kincardine Power Stn - Charlestown Jn (Goods Line)						Complete Exam: Yes						
<b>Section A: To Be Completed By The Examining Organisation</b>												
HIDDEN PARTS NOT EXAMINED (EXCLUDING FOUNDATIONS)			Part			Reason						
ITEM	DESCRIPTION	LOCATION	Est. Cost £ +/- 20%	Priority Within	Quantity	Severity	Probability	Risk Score	Works Category			
1	Remedial work to voided and eroded areas of revetment wall	all sections				3	4	E12	Brickwork/Stone Repairs			
<b>History of Live Significant Defects</b>												
No	Description	Location	Exam Date	Access Gained	Exam Type	Rec Raised	Risk Score	Access Req'd	Deter - ioration	Repaired	Flagged for Closure	Engineer Comments
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	27/11/10	N	D	NV	8	N/A	Baseline	N	N	
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	26/09/11	N	D	NV	8	N/A	Y	N	N	Loss of defence
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	05/11/12	Y	D	Y	8	N/A	Y	N	N	Concrete bagwork & rock armour repairs
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	18/12/13	Y	D	Y	8	N/A	Y	N	N	Place concrete bagwork and rock armour
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	05/08/14	Y	D	Y	8	N/A	Y	N	N	Place concrete bagwork and rock armour.
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	10/06/15	Y	D	Y	12	N	Y	N	N	Repair, defective areas appear to be worsening.
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	24/05/16	Y	D	Y	12	N	Y	N	N	Repair, defective areas appear to be worsening.
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	29/04/17	Y	D	Y	12	N	Y	N	N	Repair, defective areas significantly deteriorating.
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	17/05/18	Y	D	Y	12	N	Y	N	N	Section 1 now added. significant deterioration noted. Repair, defective areas significantly deteriorating.
1	Voids and washed out areas of defence	Areas along defence, sections 1, 2 and 3.	19/04/19	Y	D	Y	12	Y	Y	N	N	.
<b>Engineers Notes</b>												
<b>Signed</b> <small>For Employer</small>				<b>Name</b> Iain McCabe				<b>Date</b> 31-May-2019				

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Struc. Type	WCE RD	NR ID	11009030	Rpt ID	8909	OS Ref NS92858723
		Exam ID	2940107			
Dimensions	Max Height 4.00m Max Length 2500.00m					Exam Date 19/04/19
Side of Line						Last Detailed 17/05/18
Min dist. from Track	2.30					Last Visual
Line	Kincardine Power Stn - Charlestown Jn (Goods Line)					
Name:	Kincardine on Forth					

Photo 1 : Elevation Photograph



Map Extract



**Retaining Wall Detailed Examination Report****ELR: KNE1****Contract Mileage: 004m 0240yds 10.91chs****Struc. Ref: 200/561**

The 2018/2019 Detailed Examination Report was reviewed prior to carrying out the 2019/2020 examination.

The defence comprises a revetment with a wave return wall present along the length of the defence. The defence has been considered in three sections which vary in condition from fair to poor.

**CURRENT EXAMINERS RECOMMENDATIONS**

a – Install tab markers over the full length of the defence.

**Section 1**

a – Repair all voids noted throughout section.

b – Repair all washed out areas noted throughout section.

c – Repair washed out section of the cope on the wave return wall at 4M 0280Y and 4M 0295Y.

**Section 2**

a – Install rock armour along the upper half of the revetment throughout the entire section, encompassing sections of crest erosion particularly at the section end.

b – Repair voids throughout the section to prevent further deterioration.

**Section 3**

a – Install rock armour along the full length of the revetment to prevent further deterioration of the defence.

b – Repair the areas of deterioration and undermining to the wave return wall.

Has all the structure been examined? Yes (if no, see report for details)

**EXAMINERS NAME Brian Graham****DATE 14-May-2019****SIGNED**



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**Element Status Table**

Element Name	Status	Condition
Arch Ring	N/A	N/A
Ballast Plates and Boards	N/A	N/A
Bearing	N/A	N/A
Cross Girders	N/A	N/A
Floor / Deck	N/A	N/A
Longitudinal Timbers	N/A	N/A
Main Girders	N/A	N/A
Parapets and Pilasters	N/A	N/A
Rail Bearers	N/A	N/A
Spandrels	N/A	N/A
Water Proofing	N/A	N/A
Abutments	N/A	N/A
Bedstones and Cills	N/A	N/A
Columns and Cylinders	N/A	N/A
Piers	N/A	N/A
Trestles and Crossheads	N/A	N/A
Wing and Retaining Walls	N/A	N/A
Debris	N/A	N/A
Drainage	N/A	N/A
Gutters And Downpipes	N/A	N/A
Handrails	N/A	N/A
Painting	N/A	N/A
Pointing	N/A	N/A
Revetment Walls	N/A	N/A
Rivets and Bolts	N/A	N/A
Track/Road	N/A	N/A
Vegetation	N/A	N/A

**Record of Observations Under Load**

Load Type	Deck	General Area Observed	Result Of Observation	Date & Time
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**1.0 GENERAL**

Coastal and estuarine defence 200/561 (Kincardine on Forth) is situated between the Kincardine Bridge and Longannet Power Station, Fife. The start of the defence can be accessed by driving over the Kincardine Bridge onto the A986 and turning left into Chapel Street continue onto Elphinstone Street then turn left at the mini roundabout onto Station road continue until you reach the level crossing.

A 534 key will let you access by car and you can follow the path and park under the Kincardine bridge.



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Alternatively, you can cross by foot at the crossing and walk to the start of the defence.

The defence is 2755 yards (2.5km) in length, starting at 4M 0240Y (292854 687227) and ending at 5M 1235Y (294630 685459) and comprises 3 sections.

Section 1 is considered to be in a fair condition, Section 2 in poor condition and Section 3 in poor condition. It should be noted that at a large percentage of the voided areas still have a concrete base where the masonry was originally set into the revetment, this offers some stabilisation to the defence.

During the examination the weather was sunny and dry. The examination commenced at 09:30hrs with low tide at 09:00hrs. The River Forth was calm with the tide returning.

There have been no recorded call outs to this defence between last year's examination and this year's examination.

All track locations were obtained using Omnicoms mobile track locator.

No tab markers/number plates were visible over the length of the defence.

#### PREVIOUSLY RECORDED SIGNIFICANT DEFECTS

DEFECT NUMBER 1: Originally identified at a detailed examination on 27/11/10.

Defect location: Areas along defence.

Defect description: Voids, Undermining and washed out areas of defence.

Dimensions: Not provided.

Urgent: No

Status: Slight deterioration throughout

See Photographs: 6, 21, 31, 32, 36, 43, 49, 53, 59 & 68

#### PREVIOUS RECOMMENDATIONS AND STATUS

Remedial works to areas of erosion undermining and voiding which appear to be worsening.

#### 2.0 DETAILED EXAMINATION

SECTION 1 – 4M 240Y to 4M 365Y (292854 687227 to 292933 687147)

Distance from running edge to the top of the defence is in the region of 2m.

This section comprises a stone revetment approximately 3m in height with a concrete wave return and metal guard rail fence along the crest. Along the toe of the defence at low tide there is a tidal mudflat, meaning much of the toe is difficult to inspect. A view of the defence and track from the start, looking to high mileage, can be seen in Photographs 1 and 2.

A clay pipe outfall approximately 150mm in diameter was noted at the start of this section 4M 242Y (see Photograph 3), although no flow was noted during the time of this examination.

Areas of washout noted at 4M 260Y and 4M 280Y, between the revetment and the wave return wall do not appear to have deteriorated since last year's examination (see Photographs 4 and 5 respectively).

Photograph 6 shows an area of washout at 4M 280Y (2 x 0.8 x 1.6m). This defect is approximately 2m from the rail.

The eroded coping stone along the crest of the wave return wall around 4M 295Y has not deteriorated since last year's examination (see Photograph 7).

Areas of washout recorded at 4M 300Y and 4M 325Y have not deteriorated since last year's examination, as shown in Photograph 8 and 9.

A view of the defence and mud flat levels and locations of water seepage can be seen from the end of the

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section, looking to low mileage. See Photograph 10.

This section is generally considered to be in a fair condition however the following recommendations are made:

- a – Repair all voids noted throughout section.
- b – Repair all washed out areas noted throughout section.
- c – Repair eroded coping stone at the crest of the wave return wall at 4M 0295Y.
- d – Repair washout at 4M 280Y

**SECTION 2 – 4M 365Y to 4M 790Y (292933 687147 to 293170 686841)**

Distance from running edge to the top of the defence is in the region of 2.5m.

This section comprises a stone revetment approximately 3m in height with a vegetated earth crest. Along the toe of the defence at low tide there is a tidal mudflat, meaning much of the toe is difficult to inspect. The view from the start of the section, looking to high mileage, can be seen in Photograph 11.

There are a significant number of voids present within the revetment throughout this section.

Cabinet KNE4/24 is located at 4M 415Y, on the vegetated earth crest.

Several voids were noted in the revetment between 4M 385Y and 4M 490Y which can be seen in Photographs 12 (to high miles) and 18 (to high miles). These voids have not significantly deteriorated since last year's examination. These voids are approximately 5m from the running rail.

A view from 4M 393Y showing the typical condition of washout present across the revetment can be seen in Photograph 13. Deterioration of washout was noted at 4M 430Y and 4M 475Y and can be seen in Photographs 14 and 15.

A view of the outlet pipe at 4M 490Y can be seen in Photograph 17.

A large void (3m x 2m) noted at 4M 491Y (approx. 6m from running rail) has not deteriorated since last year's examination (Photograph 19).

Washout to previous areas of concrete bagwork repair show signs of deterioration and was noted at 4M 500Y (now 3m wide) and 4M 545Y is shown in Photographs 20 and 21, respectively.

An area of typical erosion (1.5m x 0.6m) noted at the crest of the defence at 4M 570Y (approx. 6m from running rail) has deteriorated since last year's examination as seen in Photograph 22.

The revetment was in poor condition along the crest at 4M 570Y as shown in Photograph 21 and 22. A general view to high mileage of erosion at the crest of the revetment can be seen in Photograph 23.

A view of typical voids, missing masonry and erosion to the revetment and crest of the defence from 4M 730Y, 760Y and 770Y can be seen in Photographs 24, 25 and 26. There has been no obvious deterioration since the previous examination.

A general view of the erosion to the crest from the end of the section 2 towards low mileage can be seen in Photograph 26.

This section is generally considered to be in poor condition and it is recommended that:

- a - Rock armour is placed along the upper half of the revetment throughout entire section, encompassing sections of crest erosion particularly at the section end.
- b – Repair voids throughout the section to prevent further deterioration.

**Section 3 – 4M 790Y to 5M 1235Y (293170 686841 to 294630 685459)**

Distance from running edge to the top of the defence is in the region of 2.5m.



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This section comprises a stone revetment with a concrete bag work wall along its crest and a vegetated slope behind. This section is in poor condition with widespread voids ranging from small to large within the masonry revetment. Along the toe of the defence at low tide there is a tidal mudflat and a danger of slipping on the seaweed, meaning the toe is difficult to inspect.

The view looking to high mileage can be seen in Photograph 29.

A 30m section of the wave return wall at the top of the revetment is being eroded by wave action at 4M 800Y (Photograph 30).

A general view of large voids in the revetment from 4M 930Y and 940Y can be seen in Photographs 31 and 32.

The depression behind the wave return wall noted at 4M 947Y has not deteriorated since last year's examination, as seen in Photograph 33.

Several voids (approx. 4m width) were noted along the top section of the revetment between 4M 940Y and 4M 951Y (7.2m from running rail) as shown in Photographs 32 and 34.

Photograph 34 highlights the revetment at 4M 960Y is showing significant deterioration from washout since last years examination (4 x 2m).

A large area of washout (9.3m x 1.5m x 0.45m) was noted with undercutting from 4M 980Y to 4M 1000Y (approx. 6m from running rail). This washout does not appear to have deteriorated since last year's examination as seen in Photographs 35.

The concrete bag work wave return wall is showing signs of further erosion between 4M 980Y since last year's examination. Photograph 36 shows the typical worsening condition of the concrete bag work and wave return wall to low miles.

Similarly, several voids (approx. 4m width x 0.4m deep) were noted along the top section of the revetment between 4M 1000Y and 4M 1010Y (7m from the running rail) as shown in Photograph 36. No significant deterioration was noted.

At mileage 4M 1075Y, there is a culvert outlet to the River Forth which appears to be flowing freely.

Another culvert was noted at 4M 1114Y. The wave return valve was found to be in good condition as seen in Photograph 40. There is also a large void in the revetment at this mileage (Photograph 41). The void has not deteriorated since last year's examination and the manhole cover is now repaired.

A void was noted in the wave return wall at the crest of the revetment at 4M 1185Y as shown in Photograph 42.

A large void (20m x 3m x 0.6m) was noted at 4M 1200Y. No deterioration was noted in the current examination (Photograph 43).

A void (1.9m x 0.8m) noted at 4M 1217Y along the crest of the revetment has deteriorated since last year's examination. Masonry revetment has been washed out as shown in Photograph 44.

A general view to high miles from 4M 1230Y, 4M 1245Y, 4M 1260Y, 4M 1295Y and 4M 1330Y of voids at the crest of the revetment can be seen in Photograph 45 to 49.

A large void (4m x 5m x 0.5m) noted at 4M 1330Y (6.6m from running rail) does not appear to have deteriorated since last year's examination as shown in Photograph 49.

Several voids and areas of washout (approx. 6.6m from running rail) were noted in the revetment between 4M 1295Y and 4M 1367Y. These areas appear to have deteriorated slightly with further bag work and masonry being washed out. The typical condition can be seen in Photographs 50.

A large void (3.5m x 3.5m x 0.5m) noted at 4M 1425Y (approx. 6.4m from running rail) appears to have deteriorated slightly since last year's examination as seen in Photograph 51. Masonry revetment stones have



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been dislodged at the interface of the revetment and the wave return wall leaving the wave return wall undermined.

A large void (8.4m x 4.2m x 0.5m) noted at 4M 1465Y (approx. 6.4m from running rail) does not appear to have deteriorated since last year's examination as seen in Photograph 52.

The revetment between mileage 4M 1510Y and 4M 1720Y is showing signs of widespread deterioration to voids and washout which can be seen in Photographs 53 to 58.

Small areas of revetment masonry have dislodged and there is undermining of the wave return wall at 4M 1520Y (Photograph 54).

A large void (10m x 4m x 0.5m) noted at 5M 0005Y has not deteriorated since last year's examination as shown in Photograph 59.

A view showing the outlet pipe from the pumping station at 5M 0060Y was flowing freely at time of inspection is shown in Photograph 60.

A large void (12m x 6.5m x 0.5m) noted at 5M 65Y (5m from running rail) has deteriorated since last year's examination (Photograph 61).

The revetment between mileage 5M 0300Y and 5M 0415Y includes areas of widespread voiding and washout. The typical condition of the revetment is shown in Photographs 62 to 67.

The revetment between mileage 5M 0675Y and 5M 0875Y showed widespread voids and washout. Generally, the voids have not visibly worsened since the previous year's examination. The typical poor condition of the revetment is shown in Photographs 69 to 72.

On the low mileage side of the culvert at 5M 675Y there is a large void in the revetment (Photograph 72). There has been a slight deterioration since the previous examination.

A view showing water on the landward side of the defence looking to high mileage at 5M 1000Y can be seen in Photograph 73.



A view of the defence from the end of the defence can be seen in Photographs 74.

This section is generally considered to be in poor condition and it is recommended to:

- a- Install rock armour along the full length of the revetment to prevent further deterioration of the defence.
- b- Repair the areas of deterioration and undermining to the wave return wall.
- c- Install a new cover to the chamber at 4M 1075Y as the public could access this area from the footbridge at the public footpath.

#### Record of Condition by Element

Element Name	Status	Condition

	<b>NETWORK RAIL</b>		
<b>Retaining Wall Detailed Examination Report</b>			
ELR: KNE1		Contract Mileage: 004m 0240yds 10.91chs	Struc. Ref: 200/561
<b>Avongards</b>			
Are Avongards Present?		No	
<b>Date Tabs</b>			
Are Date Tabs Present?		No	
<b>Plumbing Points</b>			
Are Plumbing Points Present?		No	
<b>Environmental Factors Present: No</b>			
Item number	Description	Location	
0			



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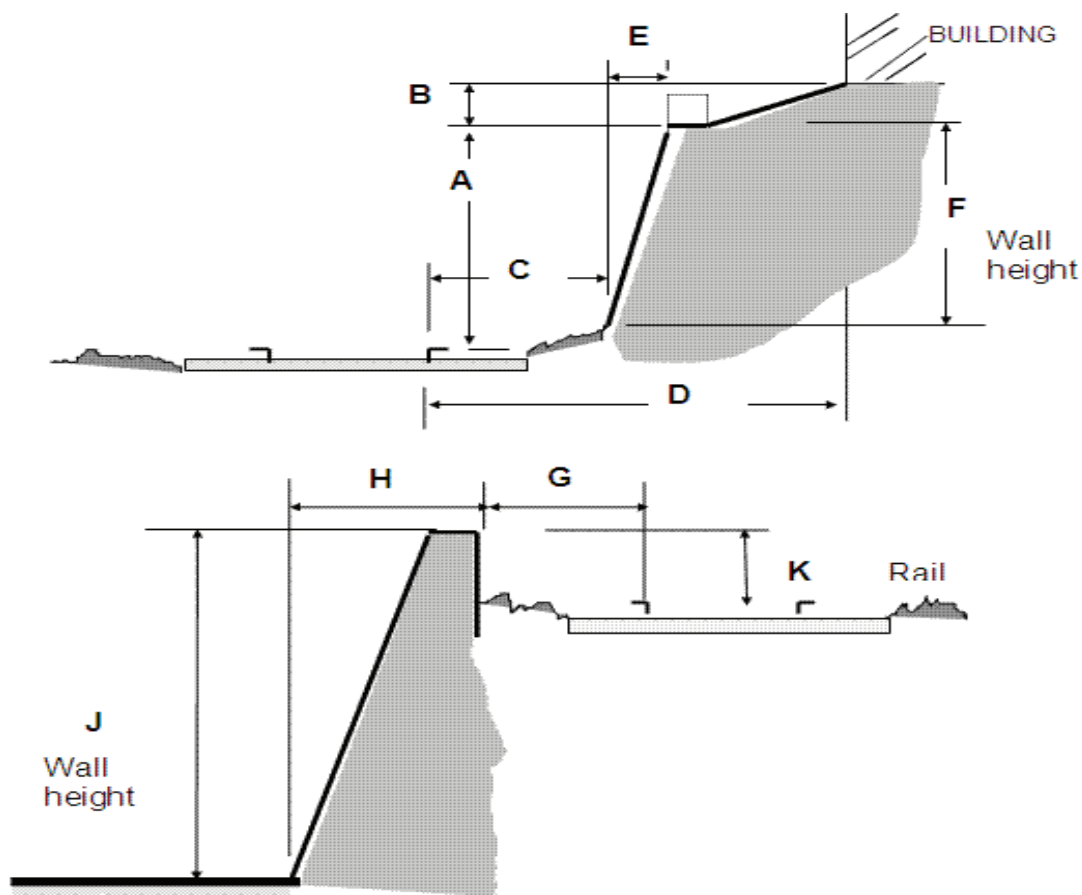
Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561

Overall Length:	2500.00m	Height:	4.00	Side Of Line:	
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## DIMENSIONS - To be quoted in metres

	A +/- 100mm	B +/- 1m	C +/- 100mm	D +/- 1m	E +/- 100mm	F +/- 100mm	G +/- 100mm	H +/- 100mm	J +/- 100mm	K +/- 100mm
Maximum	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m
Minimum	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m	0.00m



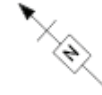
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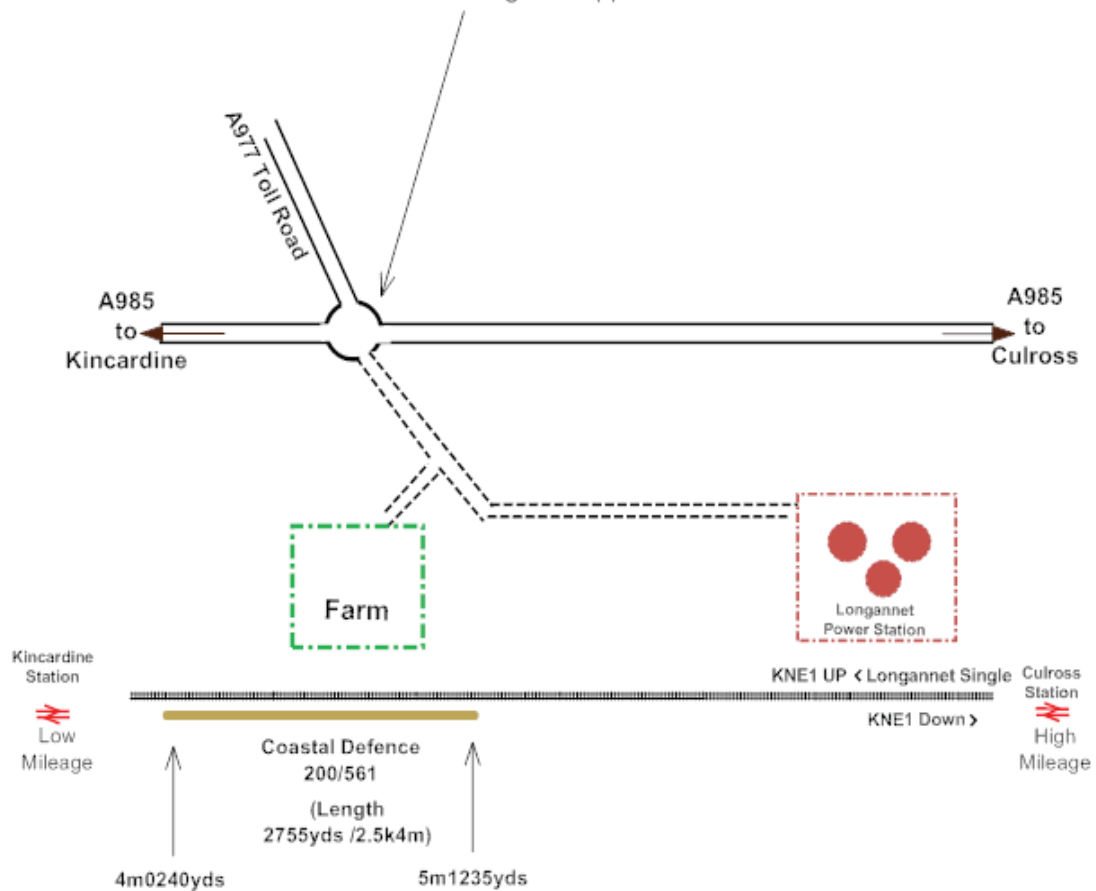
Struc. Ref: 200/561

## SITE SKETCH



### ACCESS:

Situated between Kincardine Bridge and Longannet Power Station.  
The start of defence can be accessed from A985 3rd exit Longannet roundabout.  
After 350m take 1st right to Inch Farm.  
Pass south through the farm to a padlocked gate, adjacent to the railway line.  
On foot pass through gate.  
head to low mileage for approx. 1.3km.



*River Forth*

Not To Scale

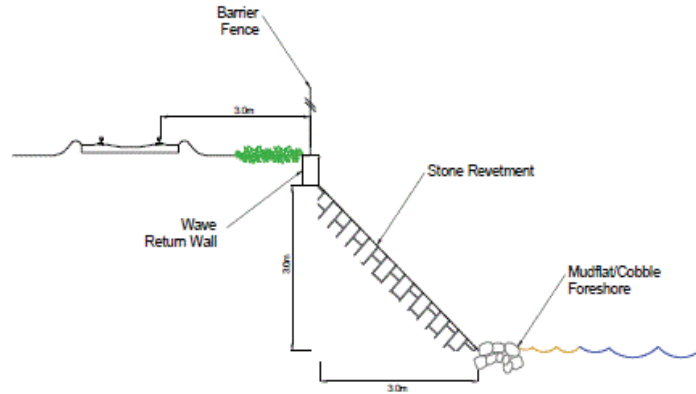
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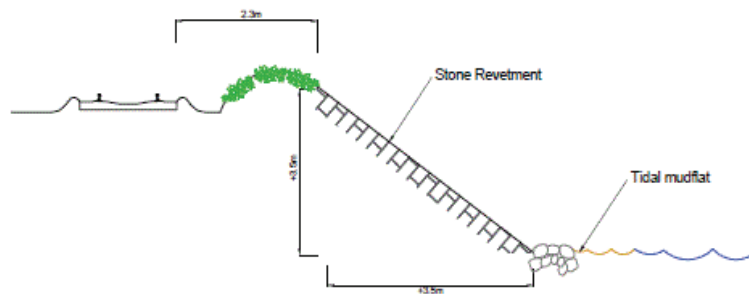
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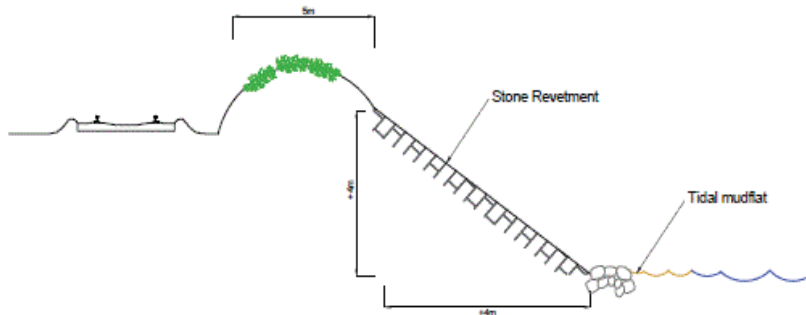
## Kincardine on Forth Section 1 4M 0240Y to 4M 0365Y



## Section 2 4M 0365Y to 5M 0790Y



## Section 3 5M 0790Y to 5M 1235Y



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Condition Ratings	N/A N/E G-Good F-Fair P-Poor	Condition Ratings	N/A N/E G-Good F-Fair P-Poor	Present?	Yes No	
Sea Defence Elements		River / Sea Wall Elements		Miscellaneous Elements		
Access Road / Tracks	G	Buttress	N/A	Beach Level Changes	No	
Access Steps	N/A	Copings and Caps	N/A	Brick Panels	No	
Aprons	N/A	Drainage	N/A	Cast Iron Adornments	No	
Armour Stone	N/A	Expansion Joints	N/A	C. Iron Live Members	No	
Boundary Walls	N/A	Foundations	N/A	Change of Construction	No	
Breakwaters	N/A	Handrails / Fencing	G	Changes since previous report	Yes	
Clay / Earth Cliffs	N/A	Painting	N/A	Concrete Panels	No	
Culverts	G	Parapets / Pilasters	N/A	CWR	Yes	
Dunes	N/A	Pointing	N/A	Fissures	No	
Embankments	N/A	Relieving Arches	N/A	Inaccessible Parts	No	
Fencing	N/A	String Course	N/A	Limited Clearance Plates	No	
Gabions	N/A	Weep Holes	N/A	Masonry Panels	No	
Groynes	N/A			Out of Use/Closed Line	No	
Marsh Land	N/A			Tell Tales / Monitoring Points	No	
Number Plate/Tab Mrkr	N/A			Rail Joints	No	
Piling	N/A	N/A = Not Applicable N/E = Not Examined		Referred to Last Report	Yes	
Pitching	N/A			Running Water Adjacent / Under	Yes	
Reno Mattress	N/A			Sediments / Debris	Yes	
Revetments	P			Soft Seams	No	
Rock Cliffs	N/A			Washout	Yes	
Salt Marsh	N/A			Works included with exam	No	
Sea Walls	N/A					
Tetrapods	N/A					
Track / Road Condition	N/A					
Vegetation	F		Principal Dimensions			
Viaduct	N/A		Overall Length	2755	yds	
Wave Return Walls	F	No. of Sections	3	No.		
Tidal Flap	N/A	Length of Sections	125 - 2205	yds		
Footbridge	N/A	OS Reference Start	NS92858722		(10 Characters)	
		OS Reference End	NS94638545		(10 Characters)	
Type of Construction / Construction Details						
Revetment with wave return wall along crest.						
Structure Crossing (Give Brief Description)						
Carrying:	ELR: KNE1 - Kincardine on Forth					
Above:	Firth of Forth					

200\_561 Coastal Defence Elements Sheet.doc

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Photograph 1 - Section 1 - General view from start of defence - 19.04.19



Photograph 2 - Section 1 - Track view from start of defence to high miles - 19.04.19



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Photograph 3 - Section 1-General view from start of defence -19.04.19



Photograph 4 - Section 1- 4M 260Y- View of washout -19.04.19



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Photograph 5 - Section 1- 4M 280Y- Washout of bagwork -19.04.19



Photograph 6 - Section 1- 4M 280Y- Washout 2m from rail, deterioration (2x0.8x1.6m) -19.04.19



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Photograph 7 - Section 1- 4M 295Y- Eroded cope - 19.04.19



Photograph 8 - Section 1- 4M 300Y- Washout 2x 1.5x0.5m deep -19.04.19



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Photograph 9 - Section 1- 4M 325Y- Washout 1.7x0.25x0.75m -19.04.19



Photograph 10 - Section 1- End of section water draining mud along toe to low miles -19.04.19



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Photograph 11 - Section 2- Start of section to high miles -19.04.19



Photograph 12 - Section 2- 4M 385Y- Typical view of poor condition revetment -19.04.19



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Photograph 13 - Section 2- 4M 393Y- Washout of sandbags (2x1x0.5m) -19.04.19



Photograph 14 - Section 2- 4M 430Y- Slight deterioration of washout (1x0.5x0.2m) -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

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Photograph 15 - Section 2- 4M 475Y- Slight deterioration to washout (2x0.5x0.25m) -19.04.19



Photograph 16 - Section 2- 4M 490Y-Low mileage of condition of revetment low miles -19.04.19



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Photograph 17 - Section 2- 4M 490Y- Outlet pipe -19.04.19



Photograph 18 - Section 2- 4M 490Y- Typical condition of revetment high miles -19.04.19



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Photograph 19 - Section 2- 4M 491Y- Void at crest of revetment -19.04.19



Photograph 20 - Section 2- 4M 500Y- Failing bag repair, slight deterioration -19.04.19



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Photograph 21 - Section 2- 4M 545Y- Failure of concrete bag work, slight deterioration -19.04.19



Photograph 22 - Section 2- 4M 570Y- Typical erosion of grass at crest -19.04.19



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Photograph 23 - Section 2- 4M 570Y- Erosion, now vegetated -19.04.19



Photograph 24 - Section 2- 4M 710Y- View of poor condition of revetment -19.04.19



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Photograph 25 - Section 2- 4M 730Y- Void and washout 0.5x1.5x1m -19.04.19



Photograph 26 - Section 2- General poor condition to low miles-19.04.19



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ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

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Photograph 27 - Section 2- 4M 760Y- High miles of concrete repair & exposed crest-19.04.19



Photograph 28 - Section 2- End of section to low miles -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

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Photograph 29 - Section 3- Start of section to high miles -19.04.19



Photograph 30 - Section 3- Washout of embankment behind retaining wall to low miles -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

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Photograph 31- Section 3- 4M 930Y- Void at mid revetment -19.04.19



Photograph 32- Section 3- 4M 940Y- 951Y-View to LM washed out revetment and voids -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 33 - Section 3- 4M 947Y - Depression behind wall 900mm deep -19.04.19



Photograph 34 - Section 3- 4M 960Y - 970Y- Washout of revetment 4x2m deterioration -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

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Photograph 35 - Section 3- 4M 980Y - Deteriorated revetment washout -19.04.19



Photograph 36 - Section 3- 4M 980Y - Poor condition of revetment washout to low miles -19.04.19



# Retaining Wall Detailed Examination Report

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Photograph 37 - Section 3- 4M 1010Y - Washout of sandbag wall, slight deterioration - 19.04.19



Photograph 38 - Section 3- 4M 1075Y- Culvert -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

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Photograph 39 - Section 3- 4M 1075Y- View of culvert outlet -19.04.19



Photograph 40 - Section 3- 4M 1114Y- Wave return valve -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

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Photograph 41 - Section 3- 4M 1114Y- Washout above wave return outlet 0.6x0.5 -19.04.19



Photograph 42 - Section 3- 4M 1185Y- Void in wave return wall -19.04.19



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ELR: KNE1

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Struc. Ref: 200/561



Photograph 43 - Section 3 - 4M 1200Y - Collapsed wave return wall -19.04.19



Photograph 44 - Section 3 - 4M 1217Y- Missing revetment, no change -19.04.19



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ELR: KNE1

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Photograph 45 - Section 3- 4M 1245Y - General view of voids (2) to low miles -19.04.19



Photograph 46 - Section 3 - 4M 1230Y - General view of void at crest -19.04.19



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Photograph 47 - Section 3- 4M 1260Y - Loss of concrete bag work -19.04.19



Photograph 48 - Section 3 - 4M 1295Y- General view of void at crest (3) -19.04.19



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ELR: KNE1

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Photograph 49 - Section 3- 4M 1330Y- Poor condition of revetment 0.5m deep -19.04.19



Photograph 50 - Section 3- 4M 1295Y to 1367Y- Poor condition of revetment to low miles - 19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

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Photograph 51 - Section 3- 4M 1425Y- Void and undermining of wave return wall-19.04.19



Photograph 52 - Section 3- 4M 1465Y- Missing masonry -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

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Photograph 53 - Section 3- 4M 1510Y to 1720Y- Poor condition of section, slight det -19.04.19



Photograph 54 - Section 3- 4M 1520Y- Undermined retaining wall & collapse of sand bags -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 55 - Section 3- 4M 1510Y to 1720Y- Poor condition of section -19.04.19



Photograph 56 - Section 3- 4M 1510Y to 1720Y- Poor condition of section (2) -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 57 - Section 3- 4M 1510Y to 1720Y- Poor condition of section (4) -19.04.19



Photograph 58 - Section 3- 4M 1510Y to 1720Y- Poor condition of section (5) -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 59 - Section 3- 5M 05Y- Large void in revetment -19.04.19



Photograph 60 - Section 3- 5M 60Y- Pipe outlet from power station -19.04.19



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ELR: KNE1

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Struc. Ref: 200/561



Photograph 61 - Section 3- 5M 65Y- Void at crest of pipe -19.04.19



Photograph 62 - Section 3- 5M 300Y- Large void in revetment - 19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

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Struc. Ref: 200/561



Photograph 63 - Section 3- 5M 300Y to 415Y- Poor condition of revetment (2) -19.04.19



Photograph 64 - Section 3- 5M 300Y to 415Y- Poor condition of revetment (3) -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 65 - Section 3- 5M 300Y to 415Y- Poor condition of revetment (4) -19.04.19



Photograph 66 - Section 3- 5M 300Y to 415Y- Poor condition of revetment (5) -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 67 - Section 3- 5M 300Y to 415Y- Poor condition of revetment (6)-19.04.19



Photograph 68 - Section 3- 5M 403Y - Washout -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 69 - Section 3- 5M 675Y to 875Y- Poor condition of section (1) - 19.04.19



Photograph 70 - Section 3- 5M 675Y to 875Y- Poor condition washout adjacent to culvert -19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 71 - Section 3- 5M 718Y - Poor condition of revetment -19.04.19



Photograph 72 - Section 3- 5M 675Y to 875Y- Poor condition of section (2)-19.04.19



# Retaining Wall Detailed Examination Report

ELR: KNE1

Contract Mileage: 004m 0240yds 10.91chs

Struc. Ref: 200/561



Photograph 73 - Section 3- 5M 1000Y- Water on the landward side of the defence -19.04.19



Photograph 74 - Section 3- End of defence to low miles -19.04.19