

Rubicon Project Consultancy Ltd

Flood Risk Assessment

1a South Parade
Seascale
CA20 1QB

August 2022



Seascale 1a South Parade © Zoom Earth

Version	Prepared by	Non-Technical Review by	Date
Draft	Rachel Gerrard	J. Tunnicliffe Wilson	3 August 2022
Final	Rachel Gerrard	J. Tunnicliffe Wilson	11 August 2022

Rubicon Project Consultancy Ltd

The contents of this FRA follows the Site Specific Flood Risk Assessment checklist as specified in the Flood Risk and Coastal change guidance at:

<https://www.gov.uk/guidance/flood-risk-and-coastal-change#contents>

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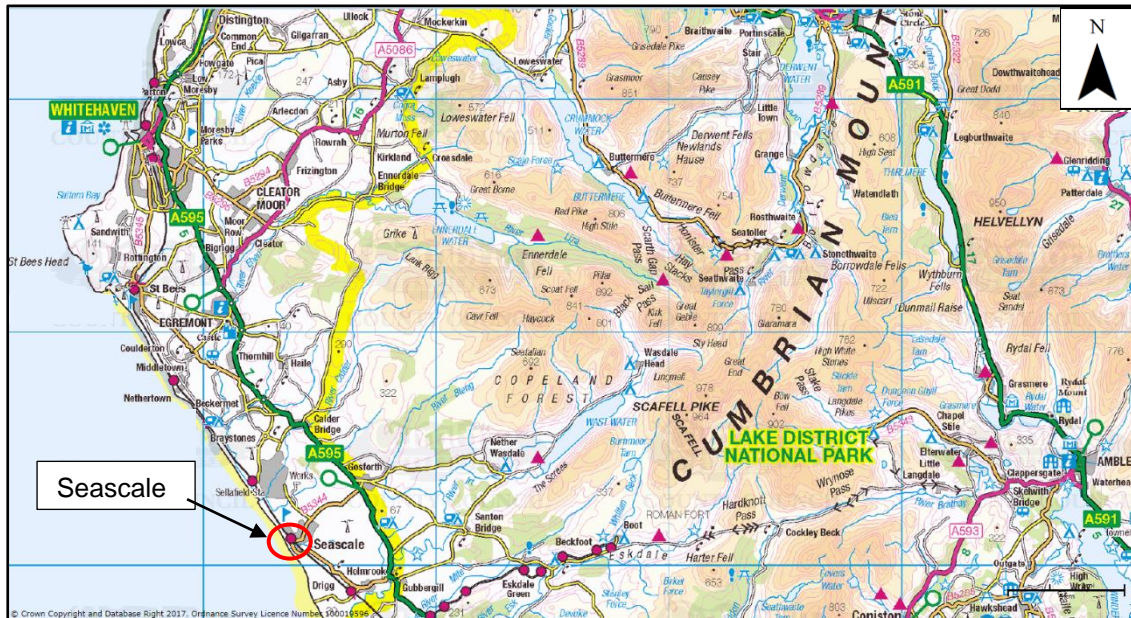
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1 - Development Site and Location

- a. 1a South Parade is situated between the coast and the railway line in Seascale CA20 1PZ approximately 19km to the south of Whitehaven on the West Coast of Cumbria. NGR NY037009. See Figure 1 - Location Plan.

Figure 1 Location plan



- b. The property has been used as a charity drop in but is currently unused.
- c. The site is shown in Flood Zone 2 on the flood risk maps. The Flood zones were taken from J-Flow data where the outline does not have the accuracy for site specific flood risk assessments so topographic survey should be used to determine an accurate level of flood risk. See Figure 2 below and Appendix C.

Figure 2 Seascale Flood Zones map



2 - Development Proposals

- a. The proposal is to convert the charity drop in into a restaurant/café. See Figure 3 below.

Figure 3 Site Plan

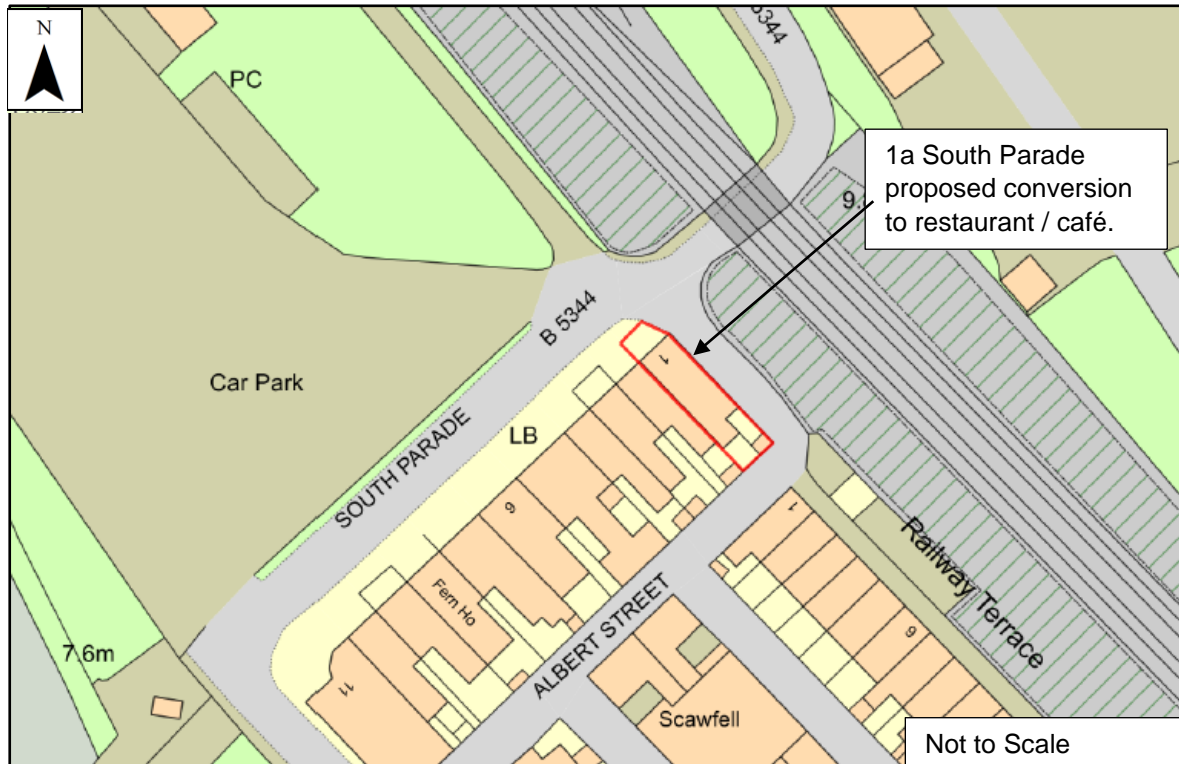


Figure 4 Photos of property



- b. The flood risk vulnerability classification of the proposals is “Less Vulnerable”
c. For FRA purposes, the expected lifetime of the development is 20 years.

3.- Sequential Test

No sequential test has been requested for this change of use.

Other sources of flood risk have been considered for this development. There is low flood risk from surface water flooding to Albert Street behind the property and no flood risk from reservoirs. See Appendix A.

4 - Climate change

The potential flood risk at the site will increase with climate change. For small rural catchments less than 5km² a peak rainfall intensity allowance is applied for climate change. Whitriggs Beck has a catchment of 4.6km² therefore the peak rainfall intensity allowance of 40% should be applied. The median annual maxima one day rainfall for the catchment is 36.1mm a 40% increase in this would be 50.5mm. For comparison, the flood event in August 2012 had a recorded rainfall of 37mm.

Although the site is shown not at tidal flood risk the effect of climate change on sea level rise still needs to be considered as it is a coastal site and Whitriggs Beck is in open channel before passing through a culvert onto the beach. The tidal 0.5% flood level is 6.06m AOD See Appendix D. In the North West River Basin District, the upper end tidal allowance for climate change is an increase of 1.41m giving a level of 7.47m AOD. A level taken in Albert Street to the rear of 1 South Parade puts the street at 7.642m AOD. The ground floor level is up steps from this point with a threshold level of 8.57m OAD, therefore would not be at risk from Tidal flooding due to climate change.

5 - Site Specific Flood Risk

- a. The main potential source of flooding to the property is fluvial flooding from Whitriggs Beck See Figure 2 and Appendix C
- b. The probability of the site flooding from Environment Agency data is less than 0.1% or 1 in 1000 year with a flood level of 8.11m AOD. See Appendix C. The threshold level of the property is 8.57m AOD. There is a plan to reinstate a doorway onto Albert Street from the rear extension that has a threshold of 8.39m AOD which is also above the predicted flood levels.
- c. Reservoir maps (see Appendix A) show that the location is not at risk of flooding from this source. Surface water flood maps show that Albert Street to the rear of South Parade has a low probability of flooding and depths would be below 300mm.
- d. There is no design (1%) flood flow for Whitriggs Beck but the site has been found by topographic survey to be above the 0.1% flood level of 8.11m AOD.
- e. The site is not expected to flood internally in the 1% design flood.
- f. Flows will increase with climate change, but the lie of the land seen on the topographic survey shows that the surface water flooding would collect in the area of Railway Terrace before overflow to Albert Street and then onto South Parade at the seaward side. Checks have also been made for tidal climate change and a flood level of 7.47m AOD was calculated for the 0.5% flood.
- g. The proposal is using an existing building so there will be no additional floodwater displaced.
- h. There are no opportunities offered by the development to reduce the causes of flooding but the impacts of flooding at this site will be reduced by installing resilient and resistant flood measures in the re-fit. The basement already has pumps in sumps and the airbricks will be re-engineered to allow air circulation but prevent floodwater flowing into the basement from the road. When the Whitriggs Beck culvert under the railway line is blocked the overland flow route directs flows through the road bridge next to 1a South Parade, moving the threshold of the airbricks up will help protect the property from this overland flow route, should it occur.

6 - Surface Water Management

- a. The existing surface water drainage system is to a surface water drain that outfalls into Whitriggs Beck.
- b. The existing rates and volumes of surface water runoff for the site are unknown.
- c. There is no plan to change the surface water disposal off site.
- d. The proposed development will not increase the impermeable area runoff from the site.
- e. The owner/occupier of the development will maintain the surface water drainage.

7 - Occupants and Users of the Development

- a. The number of users of the site is likely to increase.
- b. The proposal will not change the nature and times of use.
- c. The flood risk to the roads around the property is low, of shallow depth. The flood risk is below the finished floor level and due to the nature of the surface water flooding, flood durations will be short.

8 - Exception Test

- a. As this development is a 'less vulnerable' development in flood zone 2 an Exception test is not formally required but the development will bring wider sustainable benefits to the community by replacing an empty shop with a restaurant /café. Seascale is a local service centre
- b. The property will remain safe over its lifetime and will not increase flood risk elsewhere.
- c. This development will not reduce flood risk overall.

9 - Residual Risk

- a. Access and egress may still be subject to low flood risk to shallow depths for short durations from surface water flooding.
- b. Over the lifetime of the development any increase in flood risk will be managed by the property owners.

10 - Flood Risk Assessment credentials

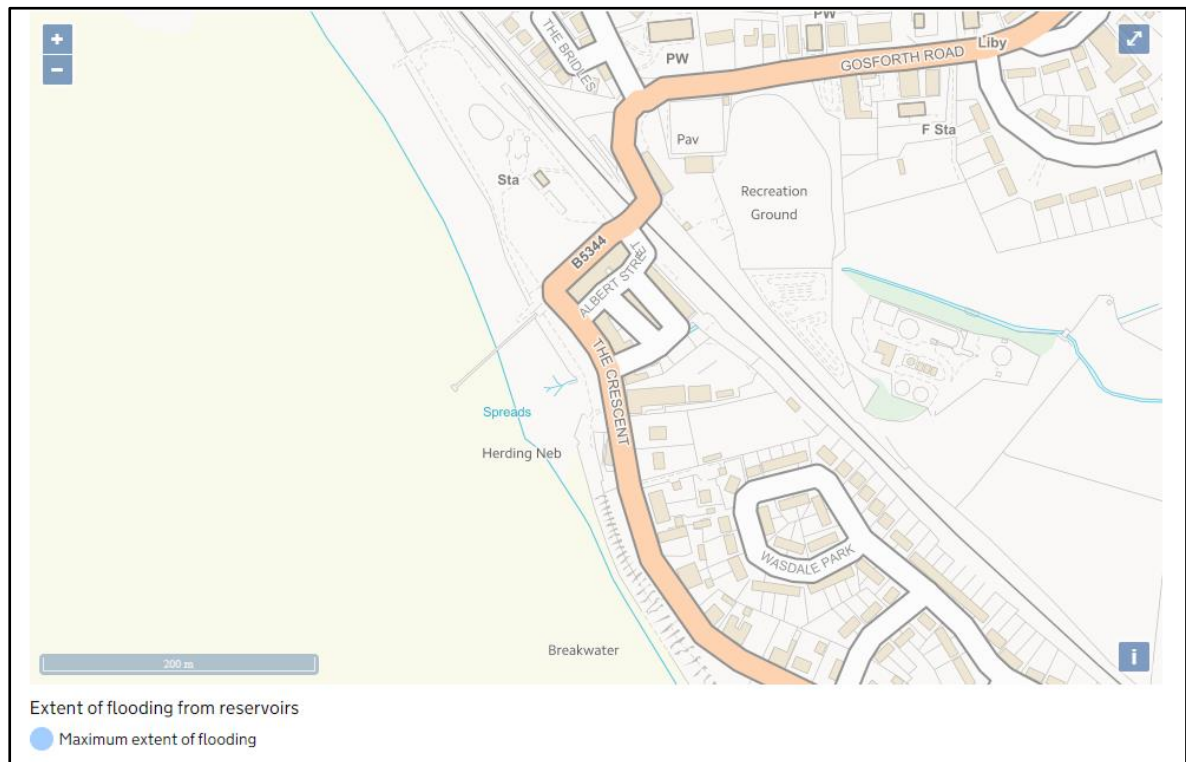
- a. This Flood Risk Assessment has been produced and written by:
Rachel Gerrard B.Eng C.Eng MICE
- b. The Flood Risk Assessment was completed August 2022.

APPENDIX A – Other sources of Flood Risk

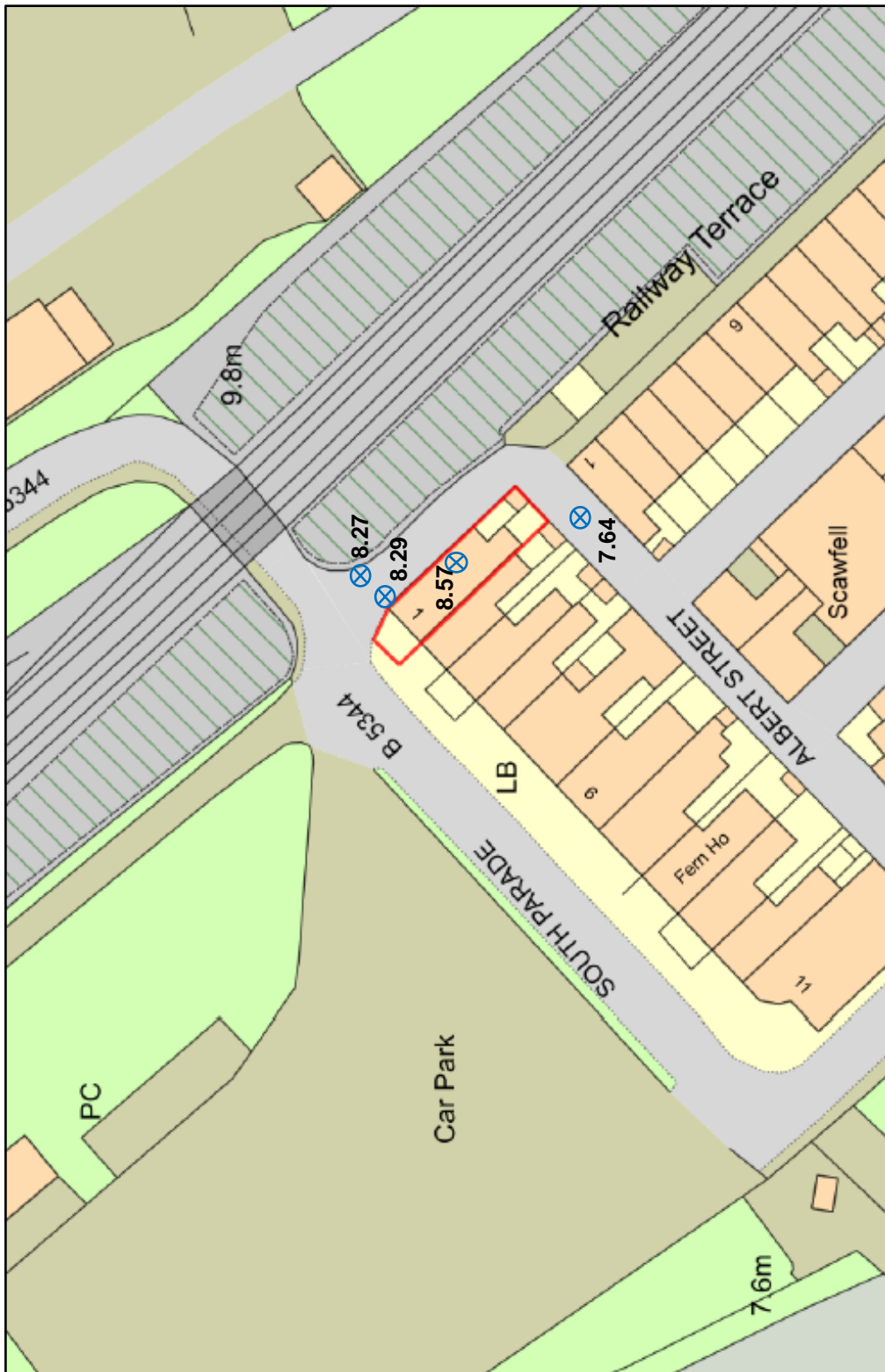
Surface Water Flood Risk



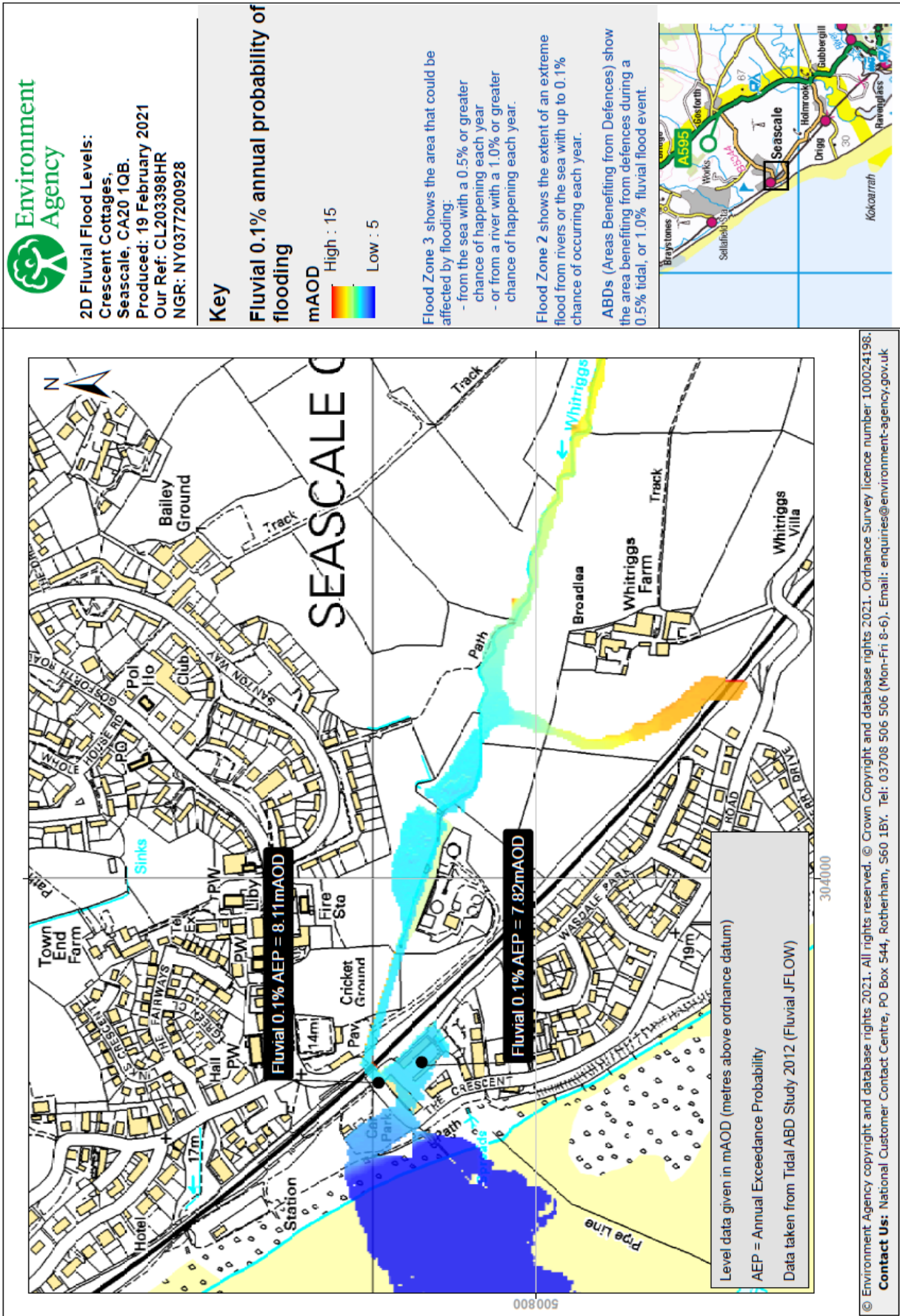
Reservoir Flood Risk



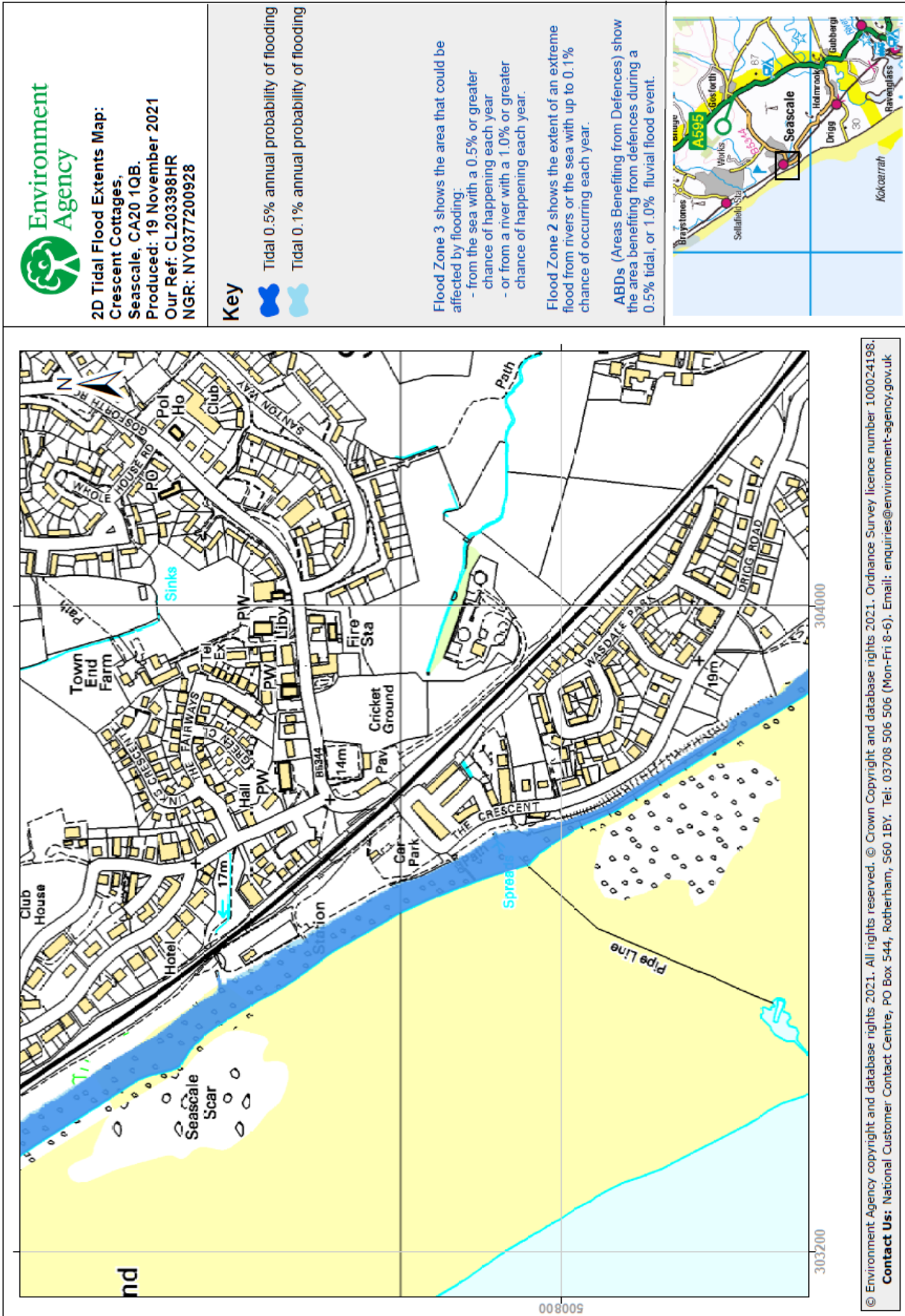
APPENDIX B – Topographic Survey



APPENDIX C –Fluvial Flood Levels from modelling data



Appendix D – Tidal flood map / Sea Levels

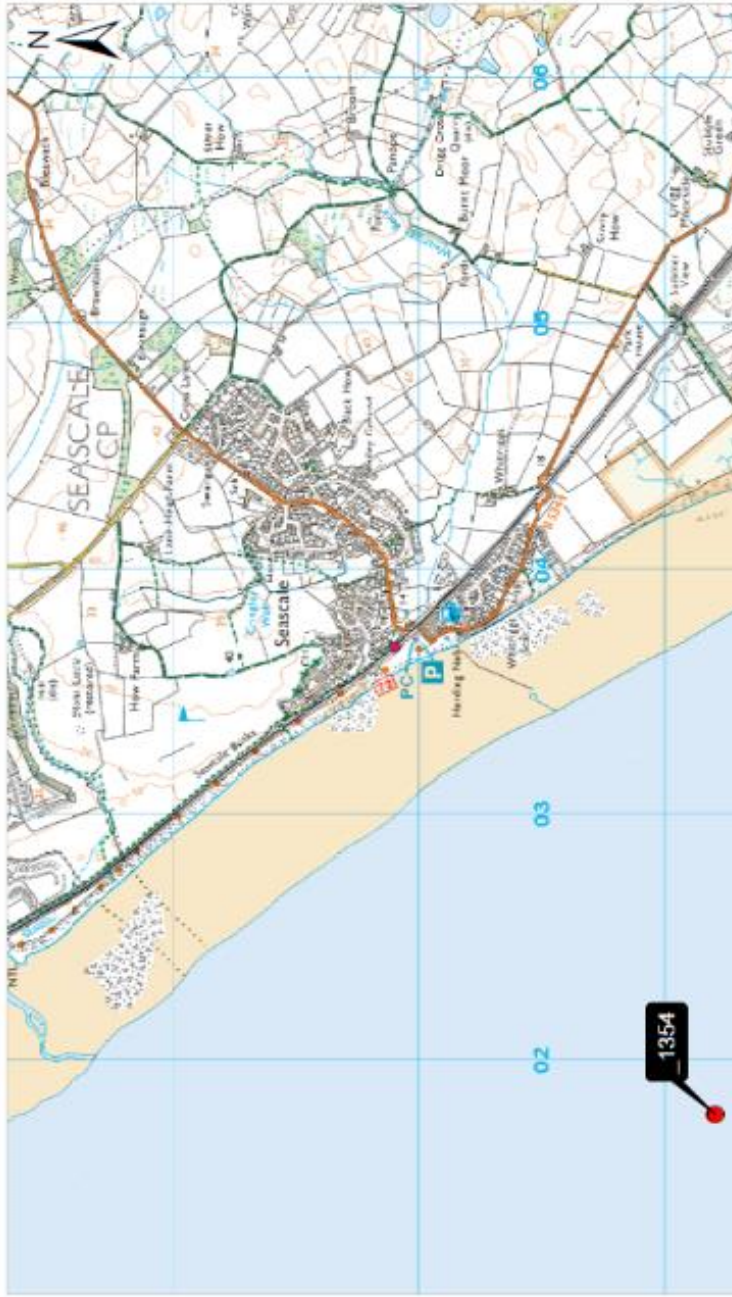




Coastal Flood Boundary Data:
 Crescent Cottages,
 Seascale, CA20 1QB
 Produced: 18 March 2021
 Our Ref: CL203398HR
 NGR: NY0377200928

Key

- CFB Extreme Sea Levels



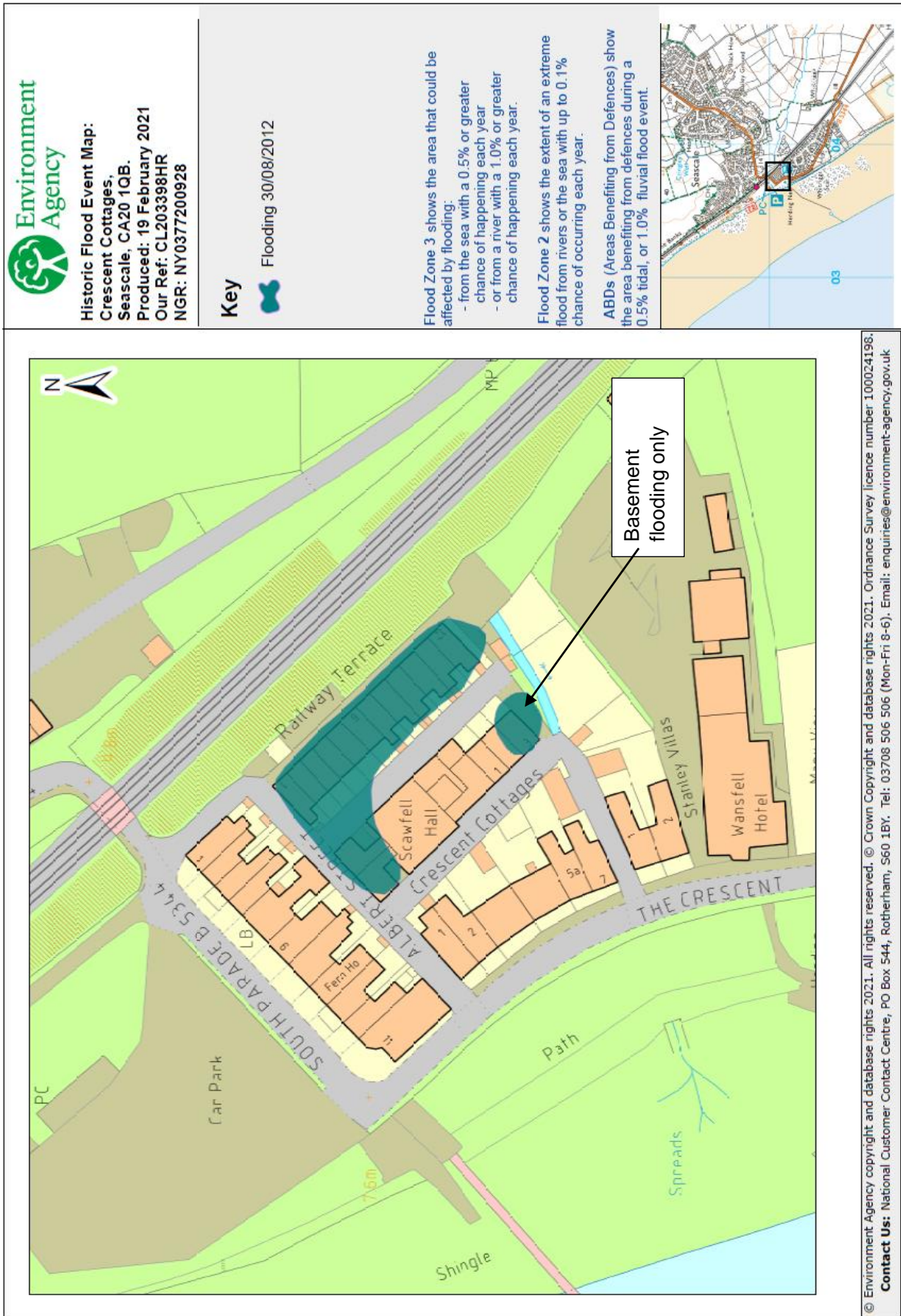
2018 Coastal Flood Boundary Data – Extreme Sea Levels

Chainage ID	Location	Easting	Northing	Base Year	Highest Astronomical Tide (mAOD)	Mean High Water Spring (mAOD)
_1354	UK MAINLAND	301780	499795	2017	4.86	3.91

Sea Level data showing still water design sea level estimates for a range of annual probability flood events around the coastline for the 2017 base year (mAOD)						
100%	50%	20%	10%	5%	1%	0.10%
5.18	5.30	5.45	5.57	5.68	5.83	6.06
						6.33

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel. 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Appendix E – Historic flood map August 2012



Appendix F – Extract from Seascale 2012 Flood Investigation

Cumbria County Council Flood Investigation Report 31 - Seascale Flood Event 30/08/2012

Cumbria County Council

Investigation

The ultimate cause of the flooding at all locations was the extreme and sustained heavy rainfall. The summer had been the wettest in England since records began and so surrounding fields were unable to absorb any new rainfall.

Rainfall Event

According to radar data taken from a weather records provider, peak rainfall was 29mm/hr and occurred at about 1:15am. The rain started at 9:00pm and finished at 3:30am with a total of 37mm in 6hrs 30mins.

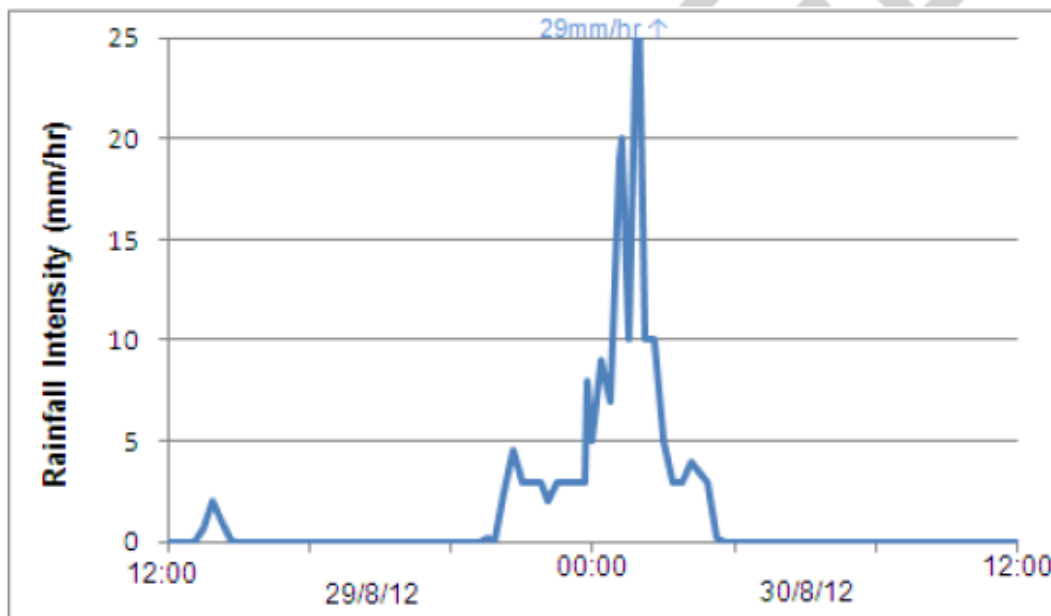


Figure 2. Radar rainfall data from 29-30 August 2012

The average total rainfall for the whole of August is 92mm (1981-2010) at St Bees Head which is the closest climate monitoring station.