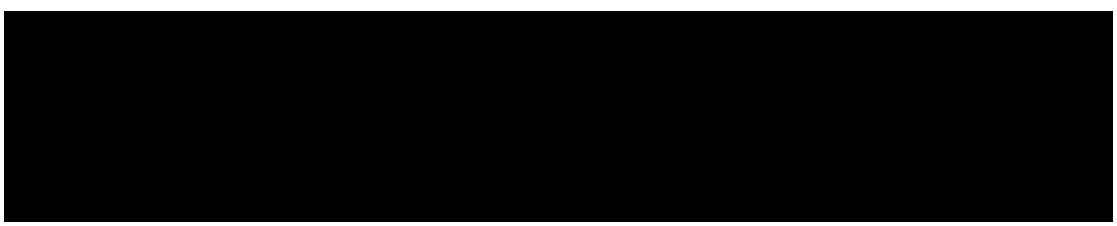
Together Against Sizewell C

May 2021

IP no. 200026424
Preface to Clive Lovelock's Written Representation:
Comments on EDF's Proposals for Rail Based Transport of Materials for Construction of Sizewell C Power Station.

TASC wish to point out that the Applicant has held 5 consultations over 9 years to arrive at a firm, sustainable and acceptable transport strategy for its proposed SZC project and the fact that it has not been able to do this supports TASC's contention that there is no acceptable transport strategy that can provide a sustainable route to the SZC project. Suffolk County Council, the lead authority on highways, rejected the Applicant's transport strategy that was presented in the Applicant's DCO application in May 2020. In response, the Applicant has presented various concepts that involve increased deliveries by road and by sea. TASC have commissioned the attached report 'Comments on EDF's Amended Proposals for Rail Based Transport of Materials for Construction of Sizewell C Power Station', which demonstrates the revised rail proposals do not appear to be at all feasible without having an adverse impact on rail passenger services.



Clive Lovelock biographical details

Clive Lovelock is a retired Railway Signal Engineer with over 40 years' experience in the railway industry. He started with British Railways in 1966 and subsequently worked for Railtrack and Network Rail before joining Lloyds Register Rail as a signalling consultant. For many years he served on the Exam Committee of the Institution of Railway Signal Engineers. He lives locally in Halesworth and uses the local rail network on a regular basis.

Comments on EDF's Proposals for Rail Based Transport of Materials for Construction of Sizewell C Power Station

Author: Clive Lovelock

Date: September 2020

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1. Executive Summary

Referring to EDF's proposal for rail traffic over the Sizewell Branch and the new "Green Route" it must be noted that:

- EDF's proposals lack significant detail. (Outstanding information is listed in Section 5 "Adequacy of Information Supplied By EDF)
- Without the detailed information it is impossible to say whether EDF's proposed 3 trains per night can be operated reliably. However it is clear from the analysis (in Section 3 "Discussion on the Feasibility/Reliability of the Proposed Freight Train Service") that it is **impossible** to operate this service without delaying existing passenger trains **if the average freight train unloading time exceeds 2¼ hours.**
- EDF **must** show that they have discussed their proposals with Network Rail and that Network Rail has agreed that the service can be operated reliably.
- EDF **must** show that Network Rail have agreed that, the track and signalling alterations required for the layout changes at Saxmundham can be completed to EDF's proposed construction timetables.
- Planning permission **must be withheld** until Network Rail's agreement on the above has been received. To do otherwise would risk a situation where following planning permission EDF could renege on their assurances to use rail transport, with the result that there would be a **substantial increase in the number of heavy goods vehicle movements.**

Outside of EDF's proposals for rail freight, the proposed Darsham "Park and Ride" impacts on the current East Suffolk Line level crossings at Darsham station and Willowmarsh Lane.

- EDF **must** show that they have carried out predictions of additional road traffic movements over the two crossings as a result of Darsham "Park and Ride" **and** that they have supplied that information to Network Rail. Such predictions **must** be **independently verified.**
- EDF **must** show that they have confirmation from Network Rail that Level Crossing risk assessments (ALCRM) have been carried out and that any additional measures to mitigate increased risk at these crossings have been identified.
- Planning permission **must be withheld** until such time that confirmation has been received from Network Rail that any increased risk at the crossings can be mitigated.

2. Constraints on the Operation of Sizewell Freight Trains

The operation and reliability of the freight train operations proposed by EDF is constrained by the following factors:

- The current freight train speed restrictions on the East Suffolk Line (ESL). The signals on the ESL are spaced according to the braking characteristics of a passenger train. So the maximum speed of a passenger train over the ESL is 55 mph. whereas freight trains are restricted to 20 mph.
- The long single line section between Woodbridge and Saxmundham. Between Woodbridge Starting signal ES2011 and Saxmundham Home signal ES2029 there can only be one train. This section is 11¾ miles long.
- The existing passenger timetable on the ESL. The last down (Lowestoft bound) train does not depart Saxmundham until 22.54 and the first up (Ipswich bound) train departs Saxmundham at 06.12.
- The length of the proposed freight trains. The longest freight train proposed is 393m long (just shy of ¼ mile). A freight train stood at Saxmundham down starting signal ES2033 waiting for a "path" onto the Saxmundham to Leiston Branch ("The Branch") will block both Albion Street and Chantry Road level crossings.
- Currently there can only be one train on "The Branch" at a time. There is nothing in the EDF proposals about any signalling arrangements that would permit more than one train to be on "The Branch". In the absence of this a second train for Leiston cannot leave Saxmundham until the first has arrived back in Saxmundham and cleared the points giving access to the branch.

3. Discussion on the Feasibility/Reliability of the Proposed Sizewell Freight Trains

In assessing the feasibility of EDF's proposed freight trains, I have made a number of assumptions. EDF's documentation is unclear on many issues of the freight train operation, but what we do know is:

- The entire 7.2km of "The Branch" from Saxmundham Junction to King Georges Avenue Leiston will have its track renewed with continuous welded rail (CWR) to permit speeds up to 25 m.p.h. and axle weights of 25.5T.
- Eight level crossings on the branch will be improved. This is principally to eliminate the need for train crew to bring their train to a stand at a crossing and then manually open and close gates for the train. Three existing trainman operated gated crossings at Knodishall L.C., West House L.C. and Saxmundham Road L.C. will be converted to Automatic Barrier Crossings- Locally Monitored (ABCL) The existing gated crossing adjacent to the old Leiston station will be converted to full lifting barriers operated by a member of the train crew.
- A new branch "the Green Route" approximately 4.5 km long will diverge from "The Branch" at a point between Saxmundham Road Crossing and Buckles Wood footpath crossing and run in a north easterly direction crossing Buckles Wood Road and Abbey Road. Both crossings will have full barriers and obstacle detectors.
- "The Branch" and "Green Route" will be used to deliver aggregates, cement, reinforcing steel and containerised goods to Sizewell C. (when I talked to EDF at an earlier consultation they proposed taking spoil away from the site by rail, I can find no reference to this in their current proposals).
- A new siding complex on the existing branch will be constructed to the east of Valley Road underbridge.
- Initially up to two trains a night will operate to the Valley Road site
- When complete up to three three trains a night will operate over the "Green Route"
- The longest train is 393m long and has a maximum load of 1800T
- Cement delivery trains of 35 wagons with a maximum load of 1800T are 314m long.
- A new crossover between the main lines will be provided to the north of Saxmundham station. This is to allow freight trains to pass in the Saxmundham station area.

The above proposals seem to be appropriate for the rail traffic envisaged, the permitted axle weight is suitable for the freight loads envisaged and the use of CWR will reduce the noise of the trains. The level crossing protection proposed conforms with the current requirements laid down in the ORR's document "Level Crossings: A guide for managers, designers and operators" Railway Safety Publication 7, December 2011.

Assumptions

- The current arrangements for operating "The Branch" will continue namely that only one train is permitted. The authority to occupy "The Branch" is a "staff" kept by the signalman at Saxmundham. The signalman will hand the staff to the driver of a freight train wishing to enter "The Branch". The driver of a returning train from "The Branch" will hand the staff back to the signalman on arrival at Saxmundham up platform.
- The time taken for a freight train to run from Woodbridge station starting signal ES2011 to Saxmundham home signal ES2029 is at least 40 minutes. Though freight trains are permitted to run at a maximum speed of 20 mph. over the ESL, the start from Woodbridge is very slow as the train is restricted to 10 mph until it reaches Sun Wharf level crossing. There follows a 15 mph restriction and it is not until the tail of the train is ½ mile clear of Woodbridge station that it can accelerate to 20 mph. This acceleration is more theoretical than real as the train has to come to a stand at Melton station to allow road traffic adequate time to clear the level crossing there. For comparison a passenger train, with a permitted maximum speed of 55mph and stopping at Melton and Wickham Market is scheduled to take 20 minutes.
- The existing ground level lever frame (Saxmundham Junction G.F,) which operates the points giving access to "The Branch" will have power operated points controlled by Saxmundham signal box. (this is not mentioned in EDF's proposals but the current arrangements are fine for a service of two or three trains a week, not for a three trains a night service).
- The time taken for a freight train to run from Saxmundham to either the terminus of the "Green Route" or to the Valley Road, Leiston unloading site is 20 minutes. Although the maximum permitted speed on these lines is 25 mph there are sections where this speed is not achievable. Leaving Saxmundham a loaded freight train is faced by a gradient of 1 in 87 initially which steepens to 1 in 53 for the first half mile. There is then a slight downhill section at 1 in 334, but the train can take little advantage of it as it will have to slow for Knodishall level crossing. This crossing along with West House and Saxmundham Road crossings will be an ABCL. The "L" refers to the fact that these automatic crossings are locally monitored i.e. the train driver monitors their operation and in the case of a failure of the crossing equipment or an obstruction on the crossing he has to be able to bring his train to a stand before reaching the crossing. This along with the distance required to bring a heavy freight train to a stand necessitates a slow approach to all three of these crossings. For comparison, when passenger trains operated over "The Branch" the journey time for Saxmundham to Leiston was 10 minutes, but these trains had the advantage of being much lighter and getting a clear run at the above mentioned crossings. (All three crossings had crossing keepers).

Sequence of Operations for the 3 Freight Train Service

This is an analysis of the sequence of operations when three return trips are operated from Saxmundham over the "Green Route". Nowhere in EDF's submission is there any reference to the anticipated time required for unloading trains at the terminus of the "Green Route". For the purpose of this exercise I have assumed an unloading time of two hours. This seems in line with other sites where aggregates are unloaded. (See appendix C).

- At 22.53 the last down passenger train runs into Saxmundham station.
- At the same time the first loaded freight train (train 1D) starts away from Woodbridge station.
- At 23.33 train 1D arrives at Saxmundham's down home signal and proceeds slowly towards Saxmundham station stopping by the signalbox for the driver to pick up the "train staff" from the signalman
- At 23.35 train 1D departs Saxmundham station arriving at the terminus of the "Green Route" at 23.55
- The train is unloaded and the loco runs round its train. The empty train (train 1U) departs at 01.55 arriving at Saxmundham up platform at 02.15.
- The signalman walks across to the up platform to pick up the "train staff" and returns to the signal box.
- In the meantime the second loaded freight train (train 2D) has arrived at Saxmundham's down home signal and is held there. (This is to minimise the time that a freight train blocks Chantry Road and Albion Street level crossings).
- At 02.17 the signalman "sets the route" to allow train 2D to run in to the down platform at Saxmundham station,
- At 02.19 train 2D comes to a stand by Saxmundham signal box to pick up the "train staff" and then proceeds towards Saxmudham's down starting signal.
- At 02.20 train 2D proceeds on to "The Branch". Once the tail of train 2D clears Chantry Road level crossing train 1U can leave Saxmundham station and proceed towards Woodbridge.
- At 02.40 train 2D arrives at the terminus of the "Green Route" and is unloaded. The loco runs round its train.
- At 04.40 the empty train (train 2U) departs the terminus of the "Green Route" arriving back at Saxmundham up platform at 05.00.
- The signalman walks across to the up platform to pick up the "train staff" and returns to his signal box. He then "sets the route" to allow the third loaded train (train 3D) to proceed towards Saxmundham's down platform.
- At 05.03 train 3D comes to a stand by Saxmundham signal box for the driver to pick up the "train staff".
- At 05.04 train 3D departs Saxmundham for the Branch arriving at the terminus of the "Green Route" at 05.24.

- At 05.05 the tail of train 3D clears Chantry road level crossing and train 2U can now depart for Woodbridge clearing the single line section at 05.45.
- At 06.12 the first down passenger train departs Saxmundham station.
- At 07.24 the last empty train (train 3U) leaves the terminus of the "Green Route" and travels as far "The Branch" up home signal at 07.44. It can go no further and is held on the branch to allow the passage of the 07.27 Lowestoft to Ipswich passenger train (due Saxmundham at 08.14).
- After the departure of the up passenger train at 08.15, train 3U can run into the Up platform at Saxmundham.
- At 08.37 the up passenger train clears the single line section at Woodbridge and train 3U can depart Saxmundham for Woodbridge.

The above time line represents the "**best case**" scenario. It gives a 27 minute "buffer" between train 2U arriving at Woodbridge and the first up passenger train leaving Saxmundham for Woodbridge. If the average time to unload a freight train is 2¼ hours rather than the assumed 2 hours, then the 3 round trips per night is **impossible** without delay to passenger trains.

There are other factors that impact on the reliability of the proposed three train service:

- The last down train of the evening (22.17 from Ipswich) is a connecting service to the 21.00 from Liverpool Street and in the event of the train from London running late will be held at Ipswich. The first loaded freight train cannot leave Woodbridge until the last down ESL train has arrived at Saxmundham.
- All the proposed freight trains have to traverse the section of railway between Boss Hall Junction (just north of Ipswich) and Westerfield Junction. This is one of the busiest (if not the busiest)sections of railway in the whole of Suffolk, as not only do the Ipswich to Felixstowe and Ipswich to Lowestoft passenger trains use it but all the container trains into and out of Felixstowe.

4. **Issues Relating to Existing Level Crossings on the East Suffolk Line**

The proposed Darsham "Park and Ride" facility will produce increased road traffic levels, particularly at shift change times. This has the potential to adversely affect the safety of Darsham and Willowmarsh Lane level crossings.

- **Darsham Level Crossing (AHB-X)**

This crossing is an automatic half barrier level crossing, i.e. it is automatically operated by the approach of a train. From the moment that the amber road lights first show till the train arrives at the crossing a minimum of 27 seconds must elapse. This type of crossing is designed to minimise the time that road traffic is held at the crossing and therefore most trains will arrive at or shortly after 27 seconds. The suitability for the use of such crossings is laid down in the ORR's document "Level Crossings: A guide for managers, designers and operators" Railway Safety Publication 7, December 2011. Two important conditions relating to road traffic apply to the use of such crossings:

"The road layout, profile and traffic conditions should be such that road vehicles are not likely to become grounded **or** block back obstructing the railway"

The likelihood of road traffic "blocking back" over the crossing will increase with the increase in road traffic levels particularly at shift change times. Grounding of road vehicles relates to low loader road vehicles. Network Rail has to carry out regular assessments of the risks at level crossings using the "All Level Crossing Risk Model" (ALCRM). This produces a risk "score". The most important component of this score is the "collective risk score" when it comes to assessing whether additional risk mitigation measures are required. Currently Darsham level crossing has a collective risk score of 2 (this is on a scale of 1 to 11 where 1 represents the highest risk). In the comments relating to the score Network Rail specifically identify the risks of "blocking back" and the high level of HGV traffic.

- **Willowmarsh Level Crossing (ABCL)**

This crossing is an automatic barrier crossing-locally monitored. The location of the "Park and Ride" car park and layout of the access road will encourage workers who live to the west of Darsham (e.g. Stowmarket and Bury St Edmunds) to use Willow Marsh Lane as a shortcut to the A1120 at Peasenhall. This "rat run" will be used by workers to avoid having to use the A12 and the route through Yoxford. The aforementioned ORR Railway Safety Publication states in the Key Features of such a crossing that:

- The carriageway on the approaches to the crossing should be sufficiently wide to enable vehicles to pass safely.
- The road layout, profile and traffic conditions should be such that road vehicles are not likely to ground or regularly to block back obstructing the railway.

EDF must show that they have produced, independently verified, assessments of the increased traffic levels and that this has been supplied to Network Rail. Network Rail must show based on this information that they have assessed any increase in risk and identified any mitigation measures.

5. Adequacy of Information Supplied By EDF

The documentation provided by EDF is vague or deficient in a large number of areas.

- There is no statement on whether EDF's proposals assume that the current "one train" arrangements on "the Branch" will be perpetuated.
- There is no information on the geographical origin of materials delivered by rail nor the times required to unload these materials.
- There is no statement from EDF as to whether the unloading site by Valley Road, Leiston will be used at the same time as the "Green Route"
- There is no information from EDF on the journey times that they have assumed for freight trains to travel from Woodbridge to Saxmundham and Saxmundham to the unloading sites.
- EDF's proposals show a new crossover at Saxmundham, but there is no corresponding drawing of the signalling alterations.
- At present the access to "The Branch" at Saxmundham is by a ground level lever frame, manually operating points. There is no proposal to upgrade this.
- A significant alteration to the signalling arrangements is required at Saxmundham, but there is no mention of this, nor is there any statement whether this and the associated track alterations can be carried out by Network Rail in the timescales that support EDF's programme.
- Throughout EDF's proposals there is no mention of Network Rail's involvement in the physical works above, nor is there any statement that they have been consulted to confirm that the extra trains can be reliably integrated into the national network.
- EDF state that they propose to build, maintain and **operate** the "Green Route" without saying why dividing the responsibility of operating the railway between Saxmundham and the Leiston terminals is a good idea.
- The "Green Route" is a new railway and will require a "Transport and Works Act" but there is no mention of this, nor the associated timescales, in EDF's proposals.

6. Conclusions

- EDF have failed to demonstrate that a "Three Trains per Night" freight service can be operated reliably given the current passenger train service over the ESL and the current passenger and freight train services over the Felixstowe branch.
- EDF have failed to demonstrate that their proposals have been discussed with Network Rail and that Network Rail supports them.
- EDF have failed to show the geographical origin of the various types of load (aggregates, cement etc.) that they propose to haul over "The Branch" and the "Green Route".
- EDF have failed to detail their unloading arrangements for the various loads, nor have they outlined unloading times.
- Without the above, EDF's rail proposals cannot be considered to be a comprehensive, fully worked through specification for the works required to operate freight trains to support the construction of Sizewell C, and as such do not provide the basis for planning approval.
- The proposed "Park and Ride" at Darsham will increase road traffic over Darsham and Willow Marsh level crossings and nothing in the documentation supplied has shown that risk assessments have been carried out and risk mitigations identified.

Appendix A: Glossary of Terms

ABCL	*A level crossing with barriers that is automatically operated by an approaching train and "locally monitored" by the driver of the approaching train.*
AHB-X	*A level crossing with half barriers that is automatically operated by an approaching train, The "X" suffix is used to show that the crossing will also operate automatically when trains approach in the opposite direction to the normal direction of traffic.*
ALCRM	*The " All Level Crossings Risk Method" is used by Network Rail as a means of comparing risks at level crossings and where to prioritise risk mitigation measures.*
Down Train	*Refers to trains travelling away from Ipswich and heading north.*
ESL	*The East Suffolk Line. The railway line between Ipswich and Lowestoft including Woodbridge and Saxmundham.*
Green Route	*The new railway proposed by EDF, that will run from a junction on the existing Sizewell branch near Saxmundham Road level crossing to a new freight terminal to the east of Abbey Road Leiston.*
MCB-OD	*Manual level crossings (full barriers) normally automatically operated with obstacle detection equipment to ensure that the crossing is clear before a train is permitted to pass over it.*
MSL	*Miniature Stop Lights consist of red and green lights displayed to the user of the crossing. They are operated automatically by approaching trains.*
Sectional Appendix	*This is a document issued by Network Rail to define the operating parameters of a section of line. It includes:* • *Details of speed restrictions.* • *The position of all level crossings, their method of operation and any local speed restrictions relating to them.* • *The mode of signalling in force on any given section of line e.g. O.T.S. indicating "One train working where a train staff is provided"*
TMO	*A level crossing operated by the train crew.*
Train Staff	*A physical item that is handed to a train driver giving him authority to enter a single line section of Railway. As there is only one train staff for any given single line section, it follows that only one train can be in that section. It can take the form of a wooden or metal staff or a metal token.*
The Branch	*This refers to the existing Sizewell branch from Saxmundham to the existing EDF unloading site just south of King George's Avenue.*
Up Train	*Refers to trains travelling towards Ipswich from the north.*

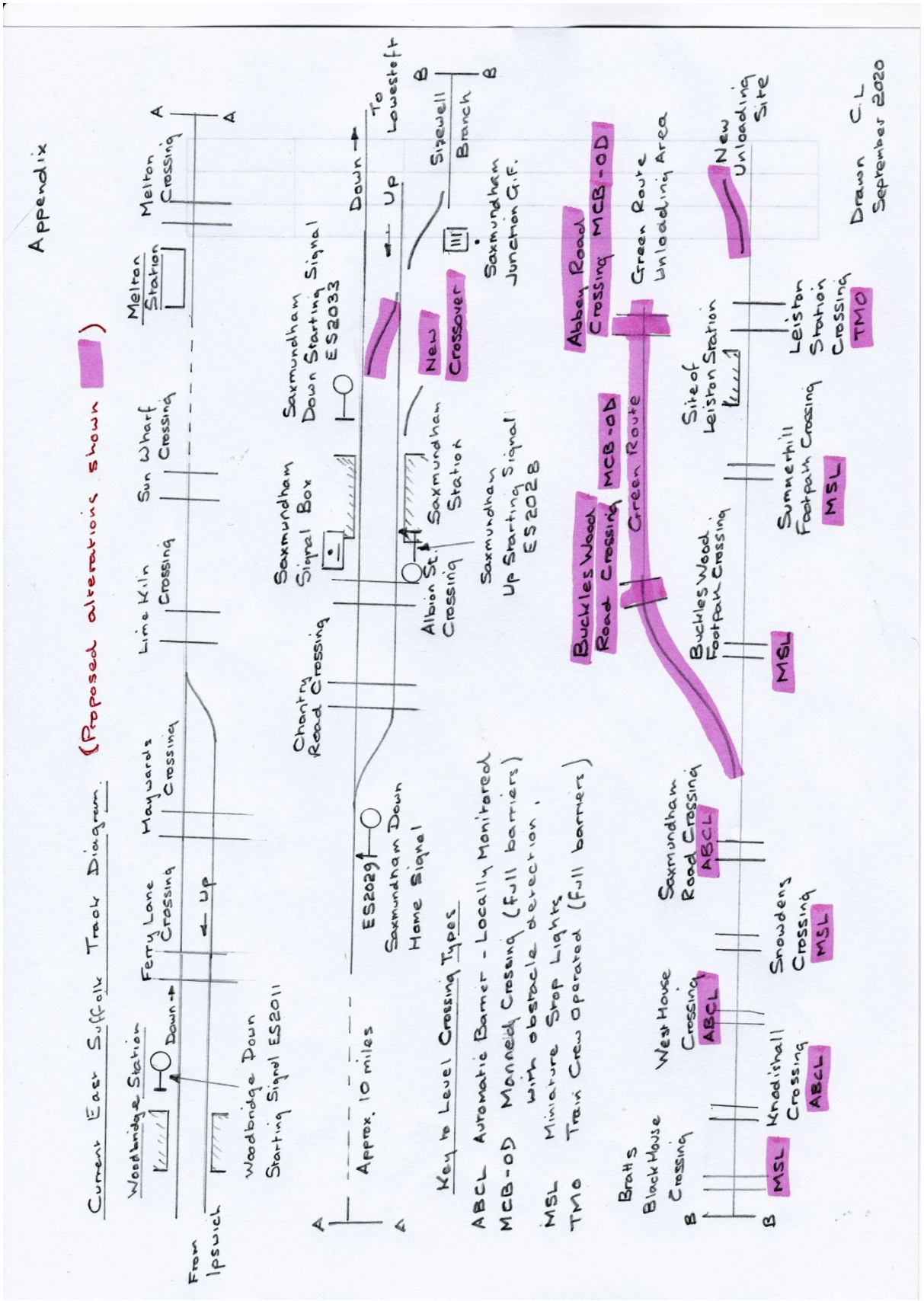
Appendix B: Track Diagram

This drawing has been produced by reference to :

1. The Anglia Route Sectional Appendix.
2. Secondary Route Signalling diagrams associated with the East Suffolk Line.
3. EDF's proposals.

Only items referred to in this document are shown. Details of the section between Melton Station and Saxmundham Down Home signal are not shown, however it should be noted that there are three automatic level crossings in this section at:

- Ufford
- Blexhall and
- Beversham.


Appendix
Current East Suffolk Track Diagram. (Proposed alterations shown)
Woodbridge Station
Down
Up
From Ipswich
Woodbridge Down Starting Signal ES2011
Ferry Lane Crossing
Maywards Crossing
Lime Kiln Crossing
Sun Wharf Crossing
Melton Station
Melton Crossing
A
B
Approx. 10 miles
ES2029
Saxmundham Down Home Signal
Chantry Road Crossing
Saxmundham Signal Box
Saxmundham Down Starting Signal ES2033
Albion St. Crossing
Saxmundham Station
Saxmundham Up Starting Signal ES2028
New Crossover
Down
Up
To Lowestoft
Sizewell Branch
Saxmundham Junction G.F.
Key to Level Crossing Types
ABCL Automatic Barrier - Locally Monitored
MCB-OD Manned Crossing (Full barriers) with obstacle detection.
MSL Miniature Stop Lights
TMO Train Crew Operated (Full barriers)
Buckles Wood Road Crossing MCB-OD
Green Route
Abbey Road Crossing MCB-OD
Green Route Unloading Area
Buckles Wood Footpath Crossing
Site of Leiston Station
Summerhill Footpath Crossing
Leiston Station Crossing TMO
New Unloading Site
Drawn C.L September 2020
Broths Block House Crossing
West House Crossing
Saxmundham Road Crossing
Knodishall Crossing
Snowdens Crossing
MSL
ABCL

Appendix C: References

In producing this document the following sources have been used:

1. The current Network Rail Anglia Route Sectional Appendix.
2. "Level Crossings: A guide for managers, designers and operators" Railway Safety Publication 7, December 2011 published by the ORR.
3. The gradient diagrams for the Sizewell Branch from the Railway Data Centre compiled from Network Rail FOI data.
4. Details of other aggregate unloading sites at Purley and Sheffield.

Aggregate Unloading sites:

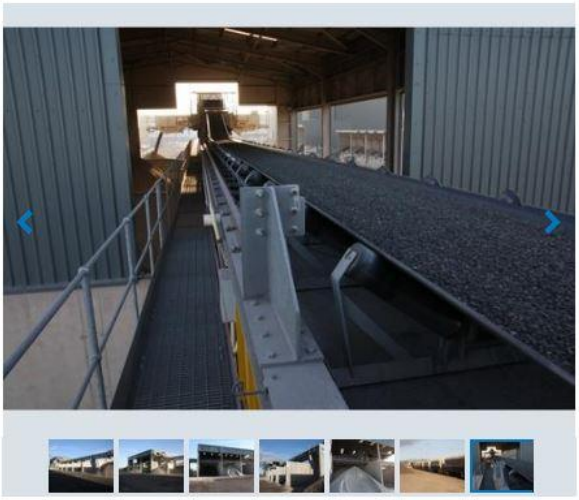
The new facilities at Purley offer considerable functional and environmental benefits not only for the company, but also their nearest neighbours. The entire unloading process is now a one-man operation with materials automatically dispatched directly to designated storage bays via the tripper conveyor. Rail wagons are now 'pulled' through the new bottom discharge unit rather than the former method where they were 'pushed'. This has the effect of increasing the distance between the locomotive and the nearest residential properties and thereby helps to mitigate the effects of noise pollution. In addition, the total elimination of grab unloading operations at the site has eradicated this particular source of nuisance noise. Moreover, the new BDU, tripper conveyor and toastrack storage facilities have facilitated the installation of permanent and effective and dust-suppression and control measures at the site.

By incorporating a new 'run around' track within the depot itself, as well as utilizing an existing section of track for stabling purposes, the Purley depot can now accommodate trains comprising up to 18 wagons instead of the previous 12. This 50% increase in capacity allows existing volumes to be maintained with fewer deliveries, while the new bottom discharge unit achieves quicker and more efficient discharge. With unloading now taking approximately 3min per wagon, 18 wagons can be fully unloaded in approximately 1.5–2h (including shunting), whereas unloading of the former 12-wagon trains was a 3h operation.

In addition, with the blending of primary and recycled aggregates becoming increasingly common, the new facility offers Day Aggregates a major commercial advantage by providing the company with the ability to create blends containing up to 60% recycled material from their on-site construction and demolition waste recycling facility.

Four years of reliable operation for the DUO - BDU and Tripper Storage System at Aggregate Industries – Sheffield

Following the demise of the Tinsley rail marshalling yards in Sheffield and the subsequent development of a smaller yard in 2007, this was followed by the opening of the Sheffield International Rail Freight Terminal (SIFRT); with part of the remaining brown field site taken up by Aggregate Industries for a £1.5 million investment in a rail-fed asphalt plant.



With a successful tender DUO Manufacturing designed and built a BDU and Tripper Storage System for Aggregate Industries which was duly commissioned and put into operation in 2013 when the site became fully operational.

Designed by DUO in conjunction with AI engineers the BDU incorporates 9 stock bunkers and can handle up to 1500tph of aggregate, enabling a train to be shunted and unloaded in just 2.5 hours.

The site receives a scheduled daily train of 1500 tonnes which comprises of a mixed load of 20/14/10/6mm aggregate and dust. This is despatched from 3 quarries – Bardon Hill (90%), Croft (7%) and Haughmond Hill, Shropshire (3%). All incoming material is then used solely for the on-site asphalt plant.

Comments on EDF's Amended Proposals for Rail Based Transport of Materials for Construction of Sizewell C Power Station

Author: Clive Lovelock

Date: March 2021

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3. Discussion on EDF's proposal for two trains per day to Leiston (LEEIE).
4. Discussion on the Feasibility/Reliability of the Proposed Freight Train Services in the years 2024-2028.
5. Adequacy of information Supplied by EDF
6. Conclusions

Appendices

- a) Glossary of Terms
- b) Sizewell Branch Gradient Diagrams

1. Introduction

This document is a response to EDF's amended proposals dated November-December 2020 and should be read in conjunction with my previous document "Comments on EDF's Rail Proposals" dated September 2020.

EDF now propose in 2023 to run two trains per night to Leiston (LEEIE). These trains would be held on the branch until 07.00 at which point the first train would proceed to LEEIE. Once unloaded the second train would proceed to LEEIE. All unloading would take place during daylight hours, the empty trains leaving Leiston in the evening, and being held on the branch until a "path" on the East Suffolk Line is available for them to head south.

In 2024 EDF propose to run up four trains per day using the "Green Route" and in 2025/6 they propose to run four or five trains per day using both the "Green Route" and the Leiston (LEEIE) terminal.

After that the number of trains per day declines to four in 2027/8 and three per day in 2029. They anticipate that train movements will steadily decline after then and cease in 2034.

2. Executive Summary

Referring to EDF's proposal for rail traffic over the Sizewell Branch and the new "Green Route" it must be noted that:

- EDF's proposals lack significant detail. (Outstanding information is listed in Section 5 "Adequacy of Information Supplied By EDF) The lack of information was highlighted in my previous submission, **none** of the deficiencies have been addressed in this latest submission from EDF and **additional clarification** is required on how services will operate safely when more than one train is on the branch at any given time. .
- The proposed two trains a day to Leiston (LEEIE) from 2023 must be in doubt, as EDF have not commenced the preparatory works associated with the level crossings (e.g. amendments to the level crossing orders which the ORR recommend should be commenced 12-24 months prior to the commissioning of the upgraded crossings.) EDF **must** agree with Network Rail suitable signalling/operating arrangement to allow the two trains to operate **reliably and safely** at the same time on the branch.
- Without the detailed information it is impossible to say whether EDF's proposed 3 trains per night can be operated reliably. However it is clear from my previous analysis, that it is **impossible** to operate this service without delaying existing passenger trains **if the average freight train unloading time exceeds 2¼ hours.**
- To move to 4/5 train a day service with the level of infrastructure currently envisaged by EDF it will be necessary to make **significant changes** to the ESL passenger service. There will be parts of the day when it will be impossible to maintain the current hourly "Clock Face" service and a number of services will need to be removed from the current timetable to produce one that is reliable and includes provides a degree of resilience to allow for late running loaded trains running to Leiston/Sizewell.
- EDF **must** show that they have discussed **all the variants** of their proposals with Network Rail and that Network Rail has agreed that the services can be operated **reliably and safely**.
- EDF **must** show that Network Rail have agreed that, the track and signalling alterations required for the layout changes at Saxmundham and the infrastructure to allow more than one train to be on the Branch/"Green Route", can be completed to EDF's proposed construction timetables.
- **The paucity of detailed proposals by EDF leads to the conclusion that this is merely a "wish list" with no realistic prospect of implementation in the timescales proposed.**

- Planning permission **must be withheld** until a **realistic programme of works** can be agreed with Network Rail **and** Network Rail have produced a Working Time Table to show how they propose to accommodate the five round trips/day envisaged by EDF in 2025/2026 . To do otherwise would risk a situation where following planning permission EDF could renege on their assurances to use rail transport, with the result that there would be a **substantial increase in the number of heavy goods vehicle movements.**

3. Discussion on EDF's proposals for two trains per day to Leiston (LEEIE)

In assessing this proposal I have made the following assumptions:

- The existing passenger timetable on the ESL. The last down (Lowestoft bound) train does not depart Saxmundham until 22.54 and the first up (Ipswich bound) train departs Saxmundham at 06.12.
- As determined in my previous document the time for a freight train to traverse the single line section between Woodbridge and Saxmundham is 40 minutes. (this is confirmed by a report to Suffolk County Council by AECOM in September 2020)
- Currently there can only be one train on "The Branch" at a time. There will need to be revised signalling/operating arrangements to permit two trains to be on the branch at any given time.
- The track renewals on the Leiston branch will have been completed by 2023.
- The upgrade of the eight road and footpath crossings will have been completed by 2023.
- Two loaded trains will run from Saxmundham Sunday night/Monday morning and "stable" on the branch to the east of Leiston. They will discharge their loads at LEEIE during the day and in the evening one or both will "stable" on the branch to the east of Leiston awaiting paths to become available south on the ESL. When the second of the empty trains has arrived at Woodbridge and cleared the single line section (at approximately 01.30 Tuesday the first loaded train will leave Woodbridge and "stable" on the branch at 02.30. the second loaded train will leave Woodbridge 02.10 and stable on the branch at 03.10. This pattern repeats itself every day until Friday night/Saturday morning when the last two empty trains of the week will return south.

Seven of the eight level crossing upgrades will require some form of train detection equipment for them to operate automatically. These crossing can be divided into two categories with different train detection criteria.

- Miniature Stop Light (MSL) type crossings as at Bratts Black House, Snowdens, Buckles Wood and Summerhill. The extent of the train detection equipment for these crossings is determined by the time taken for a pedestrian to cross the railway plus 5secs. (see ORR's " Level Crossings: A guide for managers, designers and operators" paragraph 2.272) I have assumed a crossing time of 5secs, giving a minimum warning period to pedestrians of 10 secs. It is usual to allow a further 2 secs for speedometer error/circuit reaction. Assuming the approach speed of a train is 25 mph. then train detection devices would need to extend nearly 150yds (137m) either side of the crossings.
- Automatic Barrier Crossings-Locally Monitored type at Knodishall, West House, and Saxmundham Road. The extent of the train detection equipment for these crossings is determined by the requirement that a minimum of 27 secs. elapses from the moment the amber road lights show till the train arrives at the crossing , an allowance of 2 secs. for speedometer error/circuit reaction is applied so the train detection device should be 29secs. running time from the crossing. I have assumed train crossing speeds of 15 mph. which means that train detection devices would need to extend nearly 215yds (197m) either side of the crossings.

The significance of this can be appreciated by reference to appendix B which shows the position (in miles and chains) of the level crossings on the Sizewell Branch. The shortest distance between crossings is 14 chains (less than ¼ mile) and the longest 63 chains (just over ¾ mile). Trains can be up to 430 yards (393m) long and cannot be "parked" overnight within the train detection areas of the crossings as this will cause false activation of the crossing lights/barriers.

There remains the issue of how two trains can be safely operated over the branch at the same time. Some kind of signalling/movement authority system needs to be put in place to maintain a safe distance between trains. The movements will take place largely in the hours of darkness with trains weighing up to 1,800 tons at speeds of up to 25 mph. A freight train running at 25mph. over the Sizewell branch will take between 355 yards (325m) and 410 yards (375m) depending on gradient to come to a stand. EDF's proposals are silent on the infrastructure required to operate this service.

4. Discussion on the Feasibility/Reliability of the Proposed Freight Train Services in the years 2024-2028

In my response to EDF's previous rail proposal I showed that EDF, with the infrastructure proposed, could only reliably operate 2½ trains overnight. (i.e. 3 loaded trains into the unloading site and 2 empty trains from the site heading south over the ESL). The third empty train would head south after the 08.14 Saxmundham-Ipswich train had cleared the single line and arrived at Woodbridge at 08.38) With the current passenger timetable this is the only time when there is a sufficient gap in the service for a freight train to run from Saxmundham to Woodbridge over the single line.

EDF propose to run up to five trains a day (i.e. 5 loaded trains into Sizewell + 5 empty trains towards Ipswich =10 train paths over the single line between Saxmundham and Woodbridge). With the current passenger train service only 3 round trips (6 train paths) can be accommodated which means a further 4 freight train paths need to be accommodated. This means that an additional 160 minutes of train path between Saxmundham and Woodbridge (4 freight trains @ 40 minutes/train) need to be found). The consequence of this is that the current hourly "clock face" timetable will have to be withdrawn during part of the day, as there are currently only 20 minute spare slots between trains on the Woodbridge to Saxmundham single line section). For EDF to operate five round trips per day **reliably and not to impact the punctuality of passenger trains** it may be necessary to reduce the current level of passenger services by up to 6 passenger trains a day. (This assumes that additional down (i.e. Boss Hall Junction to Saxmundham) spare train paths will need to be provided for loaded trains arriving out of course in the Ipswich area.

I have, so far, only addressed the capacity issues on the ESL between Woodbridge and Saxmundham, but the real bottleneck in operation of these additional EDF trains is the section between Boss Hall Junction and Westerfield. There can be up to 47 trains/day in each direction between Felixstowe freight terminal and Boss Hall Junction plus 33 ESL passenger trains and a further 36 passenger trains operating on the Ipswich to Felixstowe line (roughly 160 trains/day). This is one of the busiest (if not the busiest)

sections of railway in the whole of Suffolk and it will be difficult to accommodate a further 10 paths a day.

When the five freight train/day service operates, EDF envisages using both the terminal on the "Green Route" and the Leiston (LEEIE) terminal simultaneously. There is no mention of how the junction between the two lines will be operated or how the potential for conflicting train movements will be managed, the consequence of a collision between two heavy freight trains both running at 25 mph. is massive and must be addressed.

5. Adequacy of Information Supplied By EDF

The documentation provided by EDF is vague or deficient in a large number of areas.

- There is no statement on whether EDF's proposals assume that the current "one train" arrangements on "the Branch" will be perpetuated. EDF's most recent proposals (November 2020) have periods where there is requirement for two or more trains to be on the Branch/Green Route simultaneously but without any details of how a safe method of working these trains will be implemented.
- There is no information on the geographical origin of materials delivered by rail or the times required to unload these materials.
- There is no information from EDF on the journey times that they have assumed for freight trains to travel from Woodbridge to Saxmundham and Saxmundham to the unloading sites.
- EDF's proposals show a new crossover at Saxmundham, but there is no corresponding drawing of the signalling alterations.
- At present the access to "The Branch" at Saxmundham is by a ground level lever frame, manually operating points. There is no proposal to upgrade this.
- A significant alteration to the signalling arrangements is required at Saxmundham, but there is no mention of this, nor is there any statement whether this and the associated track alterations can be carried out by Network Rail in the timescales that support EDF's programme.
- Throughout EDF's proposals there is no mention of Network Rail's involvement in the physical works above, nor is there any statement that they have been consulted to confirm that the extra trains can be reliably integrated into the national network.
- EDF state that they propose to build, maintain and **operate** the "Green Route" without saying why dividing the responsibility of operating the railway between Saxmundham and the Leiston terminals is a good idea.

- The "Green Route" is a new railway and will require a "Transport and Works Act" but there is no mention of this, or the associated timescales, in EDF's proposals.
- When two trains/night service to Leiston operates two trains will be "parked" overnight on the Branch, there is no mention of whether the locomotive engine will be shut down.

6. Conclusions

- EDF have failed to demonstrate that a "Three Trains per Night" freight service can be operated reliably given the current passenger train service over the ESL and the current passenger and freight train services over the Felixstowe branch. They now propose, at times, to run four or five trains a day without detailing the effects on the current ESL passenger timetable.
- EDF have failed to produce any evidence of how they propose to eliminate the risk of a major collision between two freight trains when both the "Green Route" and the Leiston (LEEIE) terminals are in use simultaneously.
- EDF have failed to demonstrate that their proposals have been discussed with Network Rail and that Network Rail supports them.
- EDF have failed to show the geographical origin of the various types of load (aggregates, cement etc.) that they propose to haul over "The Branch" and the "Green Route".
- EDF have failed to detail their unloading arrangements for the various loads, nor have they outlined unloading times.
- Without the above, EDF's rail proposals cannot be considered to be anything other than speculative and as such do not provide the basis for granting planning approval.

Appendix A: Glossary of Terms

ABCL	*A level crossing with barriers that is automatically operated by an approaching train and "locally monitored" by the driver of the approaching train.*
AHB-X	*A level crossing with half barriers that is automatically operated by an approaching train, The "X" suffix is used to show that the crossing will also operate automatically when trains approach in the opposite direction to the normal direction of traffic.*
Down Train	*Refers to trains travelling away from Ipswich and heading north.*
ESL	*The East Suffolk Line. The railway line between Ipswich and Lowestoft including Woodbridge and Saxmundham.*
Green Route	*The new railway proposed by EDF, that will run from a junction on the existing Sizewell branch near Saxmundham Road level crossing to a new freight terminal to the east of Abbey Road Leiston.*
MCB-OD	*Manual level crossings (full barriers) normally automatically operated with obstacle detection equipment to ensure that the crossing is clear before a train is permitted to pass over it.*
MSL	*Miniature Stop Lights consist of red and green lights displayed to the user of the crossing. They are operated automatically by approaching trains.*
Sectional Appendix	*This is a document issued by Network Rail to define the operating parameters of a section of line. It includes:* • *Details of speed restrictions.* • *The position of all level crossings, their method of operation and any local speed restrictions relating to them.*

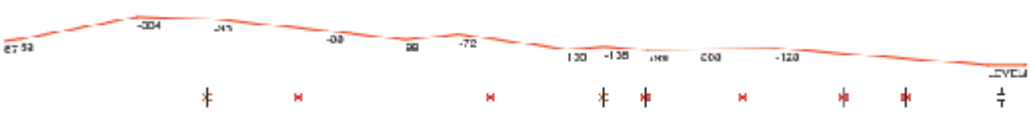
.	• *The mode of signalling in force on any given section of line e.g. O.T.S. indicating "One train working where a train staff is provided"*
Train Staff	*A physical item that is handed to a train driver giving him authority to enter a single line section of Railway. As there is only one train staff for any given single line section, it follows that only one train can be in that section. It can take the form of a wooden or metal staff or a metal token.*
The Branch	*This refers to the existing Sizewell branch from Saxmundham to the existing EDF unloading site just south of King George's Avenue.(LEEIE)*
Up Train	*Refers to trains travelling towards Ipswich from the north.*

Appendix B: Gradient Diagram

ELR DATA FILE - SIZ

SIZEWELL SIDINGS

www.railwaydata.co.uk



M. Ch.	Type	Name	Details	ID
92m 20ch	Crossing	Bralts Black House	Private User worked Crossing with Telephone	-
92m 50ch	Crossing	Knodishall	Public Highway Manually Controlled Gates	-
93m 31ch	Crossing	West House	Public Highway Manually Controlled Gates	-
93m 68ch	Crossing	Snowdens	Private User worked Crossing with Telephone	-
94m 02ch	Crossing	Saxmundham Road	Public Highway Manually Controlled Gates	-
94m 33ch	Crossing	Buckles Wood	Public Footpath Crossing	-
94m 66ch	Crossing	Summerhill	Public Footpath Crossing	-
95m 06ch	Crossing	Leiston Tmog	Public Highway Manually Controlled Gates	-
95m 37ch	Bridge	Valley Road	Underline Bridge | Steel / Wrought Iron	1110

91m 40ch +87	91m 46ch +53	92m 2ch -334	92m 28ch -98	92m 61ch -88	93m 8ch +99	93m 22ch -72	93m 68ch +155
93m 68ch -138	94m 2ch +799	94m 18ch +808	94m 42ch -128	96m 28ch LEVEL	96m 39ch +82		

1 (SIZ 091.49 - 095.51)

M. Ch.	Type	Name	Details	ID
95m 72ch	Crossing	Sizewell	Public Highway Manually Controlled Gates	-

96m 56ch LEVEL	96m 62ch -412

2 (SIZ 095.51 - 096.00)

KEY

BRIDGES : Pipe Bridge, Overline Bridge, Underline Bridge, Footbridge, Viaduct, Railway Intersection Bridge, Side of Line Bridge (no infrastructure over bridge)
CROSSINGS : Footpath Crossing, Station Barrow Crossing, User Worked Crossing, Crossing with Barriers or Gates (non-user worked), Open Crossing
OTHERS : Tunnel