

Our Services

PBH Surveys are committed to delivering the highest quality of deliverable. A 'once only' approach to data capture and a cost effective, efficient service.

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**Surveying is a fast
evolving discipline,
with a modern focus**



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About PBH Surveys Company

Surveying is a fast evolving discipline with a modern focus, allowing data to be captured remotely and at a faster speed. PBH Surveys believes in collaborating with innovative and efficient organisations throughout the industry, providing our clients with a complete professional service from tender stage through to final deliverable. The result of this approach is:

 <p>A BROAD VISIBILITY OF THE MARKETS CAPABILITY</p>	 <p>CLEAR, UNCONSTRAINED ACCESS TO A BREADTH OF TECHNOLOGICAL DEVELOPMENTS</p>	 <p>THE ABILITY TO CONTROL TIMESCALES WITH ALL STAGES OF DELIVERY BEING IN HOUSE.</p>
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We have a formal structured approach to competency and have close links to approved training providers for training our staff towards Technical and Chartered members of the Chartered Institution of Civil Engineering Surveyors. All of our surveyors are exposed to a high amount of site work on a daily basis and as such we take a very proactive approach to safety on site, utilising:

- **Dynamic risk assessment**
- **Training**
- **Briefing sessions**
- **Domain specific safety training (railway / highways etc.)**

PBH Surveys are committed to delivering:

- | | |
|---|--|
| ■ The highest quality of deliverable | ■ A cost effective, efficient service |
| ■ A 'once only' approach to data capture | ■ Value and performance |





Our Service Overview

Surveying within the railway infrastructure and highway infrastructure demands the highest level of skill, efficiency, and safety. PBH Survey's team has gained a vast amount of experience in this sector. Here is a brief overview of our services



RAILWAY SURVEYS

Surveying within the railway infrastructure demands the highest level of skill



PLAIN LINE

We have surveyed plain line throughout the UK supplying data to many of the principal contractors.



SWITCHES & CROSSING

Complex S&C surveys require the highest degree of knowledge and experience.



GAUGING

Static and Kinematic solutions to gauge clearance surveys.



RAIL DEPOT

Extensive knowledge of p-way, s&c and depot surveys



HIGHWAY

PBH has extensive experience in varying complexities of highway services.



LASER SCANNING

PBH harness the benefits of laser scanning to ensure a more robust delivery.



BUILDING INFORMATION MODELLING

PBH is proficient at producing useable data from point clouds.



PBH PLANNING

We are fully compliant with the requirements of National Track Access Planning and NR/L2/OHS/019 Safety of people working on or near the line.



UTILITY DETECTION & SERVICE MAPPING

PBH offer full Utilities Surveys fully compliant with BSI PAS 128 standards



TRACK, STRUCTURAL AND GEOTECHNICAL MONITORING

The PBH Monitoring team have close working relationships with leading suppliers of monitoring equipment



TECHNICAL SUPPORT

PBH are well positioned to provide all aspects of technical and engineering support



UAV SURVEYS

UAV surveys collect data using small remotely piloted aircraft systems.



Railway Surveys

Surveying within the railway infrastructure demands the highest level of skill, efficiency and safety.

PBH has a successful history of delivering a large number of complex surveys in order to facilitate multi-disciplinary projects.

PBH's team is very experienced in the latest technology and possesses a deep understanding of the infrastructure.

All PBH surveyors are fully compliant with the latest Network Rail standards. Our in house Quality Assurance team always deliver in accordance with current Network Rail standards.



PBH promotes safe working at all times on all Network Rail infrastructure and fully complies with 'Safety of People working on or near the line'.



Plain Line

Our surveyors have surveyed plain-line sites across the UK supplying data to many of the principal contractors.


Each PBH surveyor has extensive componentry knowledge which, coupled with modern surveying techniques, ensures a final deliverable that meets and often exceeds the current Network Rail standards.



Modern surveying techniques

Meet current standards

Component knowledge



Each 'PBH' surveyor has extensive knowledge of components and of the true workings of an operational railway.



Switches & Crossings

Complex S&C surveys require the highest degree of knowledge and understanding of the permanent way infrastructure.

The PBH team is highly skilled and trained in carrying out S&C surveys, with many years' experience of working closely with our in-house design teams to undertake these projects.

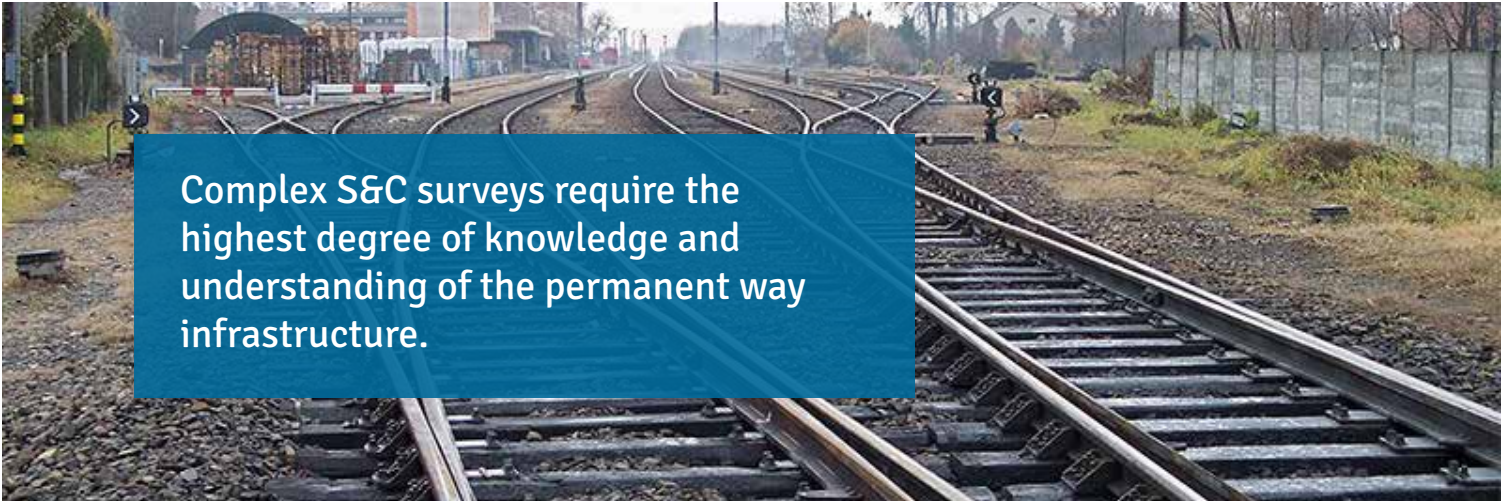
Our survey teams work efficiently with single-operator robotic instrumentation and mass data capture systems to ensure that all precious time on site is utilised efficiently.



Highly skilled
team

Many years of
experience

Time is utilised
efficiently



Complex S&C surveys require the highest degree of knowledge and understanding of the permanent way infrastructure.




Gauging

PBH Surveys' provide structure gauge clearance surveys in compliance with Network Rail Standard NR/L2/TRK/3203. To ensure the safe passage of trains surveys are carried out as part of the suite of gauging standards which manage risk relating to gauging compatibility, structural clearances, passing clearances and calculation of stepping clearances on the infrastructure.

All gauging surveys are carried out with the latest compliant equipment; utilising track mounted Abtus Routescans, Balfour Beatty Lasersweep, Robel Platform Gauges. Gauging surveys include rail geometry collected from both TMDs and conventional topographical methods.

The Permanent Way Design team within PBH Rail offer full clearance analysis through ClearRoute; providing Network Rail National Gauging Database reports.



PBH utilises the latest approved equipment to provide static and kinematic solutions for gauge clearance surveys.



Rail Depots

Depot surveys, although part of the railway infrastructure often pose a different set of challenges. Some examples of this would be:

- Typically, depots are open when the railway network is closed.
- Generally, tracks are in a poor condition as maintenance is reduced due to the low speeds permitted.
- Often depots have a collection of varying materials and S&C ages which requires a wealth of experience when trying to identify.



Some depots have stabled stock that cannot be moved – PBH are well versed in selecting appropriate survey techniques to minimise the problems this may cause for a complete survey deliverable.

Depots also require staff to communicate with depot managers to agree local safe-working arrangements on closed/open lines within the depot. This requires a clear understanding of depot layouts to work in close proximity to stabled trains and ensure minimal gaps are left in survey data.



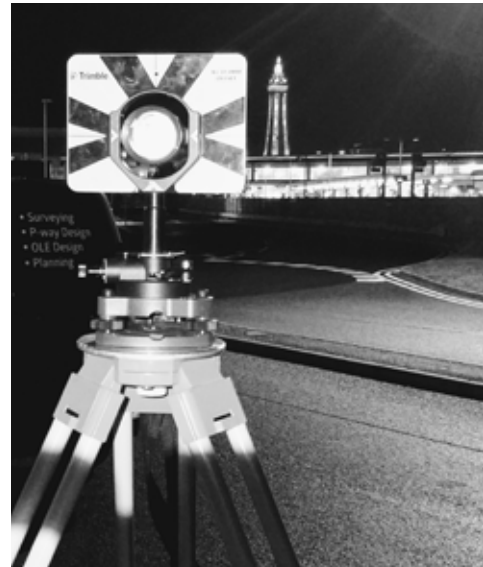
Highways

Similar to surveying within the railway corridor, the highway infrastructure calls for a comprehensive understanding of efficient, accurate and safe working practices.

PBH has in house Laser scanning capabilities to allow data capture of the highway from a position of safety with no need to enter the carriageway. PBH also has an expert supply chain that carry out mobile mapping services for larger projects to help reduce the requirement of traffic management, thus improving safety for all workers.

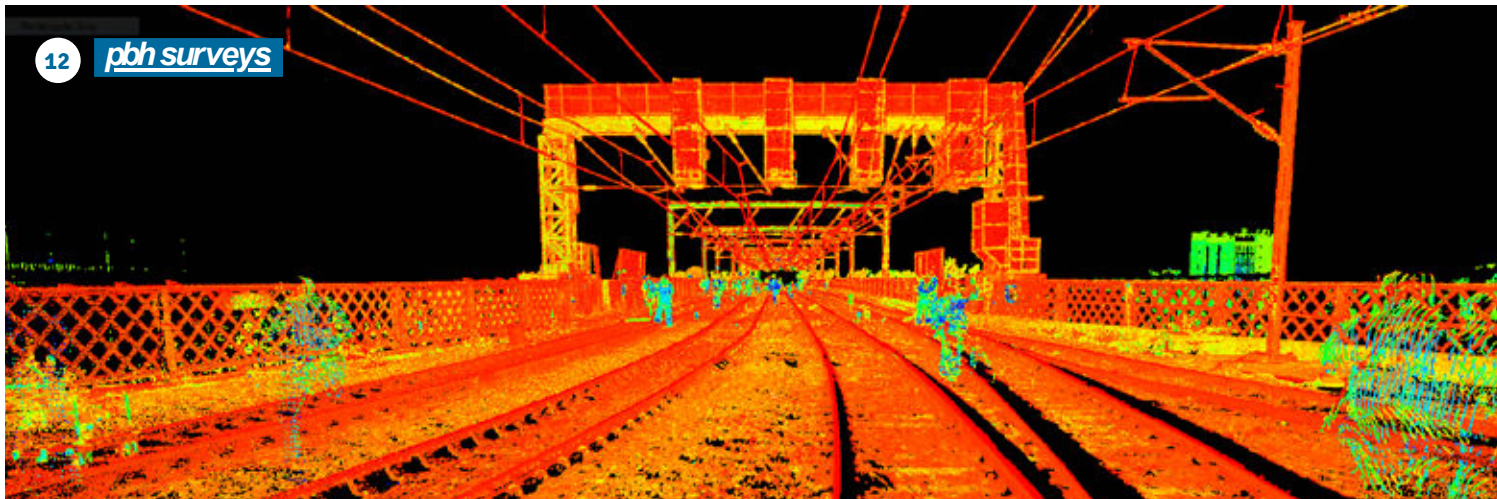
PBH has extensive experience in varying complexities of highway services.

Should there be a need for surveys to be carried out within the carriageway environment then PBH work with trusted traffic management suppliers to ensure the safety of our operatives when carrying out surveys on the highway infrastructure.



All of our surveyors are trained to work safely on the highways and manage the safety of all staff at all times.





Laser Scanning

When surveying some of the largest and most complex structures on the network, PBH harness the benefits of laser scanning to ensure a more robust deliverable.

Some of the benefits of laser scanning include:

- Entire & accurate dimensions.
- A repeatable 3D environment allowing for easy navigation.
- Geo-referenced information which can be linked to design projects.
- Provision of an accurate basis to build infrastructure models.
- Safe non-contact data capture even in difficult or dangerous places to access.
- A 'Capture-All/Capture-Once' methodology to reduce the need for site revisits.
- An insurance policy against future scope creep – the data is there even if not required at the project outset.

PBH Surveys can deliver outputs directly tailored to client requirements:

- 'Traditional' Linework/linestyles 2D Drawings – dgn/.dwg
- 'Traditional' 3D Wireframe Drawings –.dgn/.dwg
- 'Simple Hybrid' 3D Wireframes/Solid Models – combining traditional track surveys with 3D Solid models of complicated structures – dgn/.dwg/.rvt/.msh
- 'Complex Hybrid' 3D Wireframes/Solid Models – Full solid models of all infrastructure supplemented with traditional topographic surveys – dgn/.dwg/.rvt/.msh
- Total 3D Solid Models – No traditional Linework. – dgn/.dwg/.rvt/.msh

All deliverables can be tailored to suit time/cost budgets

- Outline Detail – Building Shapes/groundforms – representative components.
- Medium Detail – Building Shapes/Features – basic componentry accurately depicted.
- High Detail – WYSIWYM “What You See Is What You Model” Accurate depictions of all features required in specification.
- Rendered High Detail – Photorealistic Models used for heritage grade/planning applications etc



Building Information Modelling

Point cloud data is notoriously large, with modern laser scanners capable of capturing in excess of 25GB in one shift. As a result, PBH are proficient at producing useable and manageable data from point cloud surveys.

3D solid models enable global visibility, facilitating the sharing and manipulation of data, whilst providing a perfect environment to operate projects under the principles of Building Information Modelling (BIM).






PBH Planning

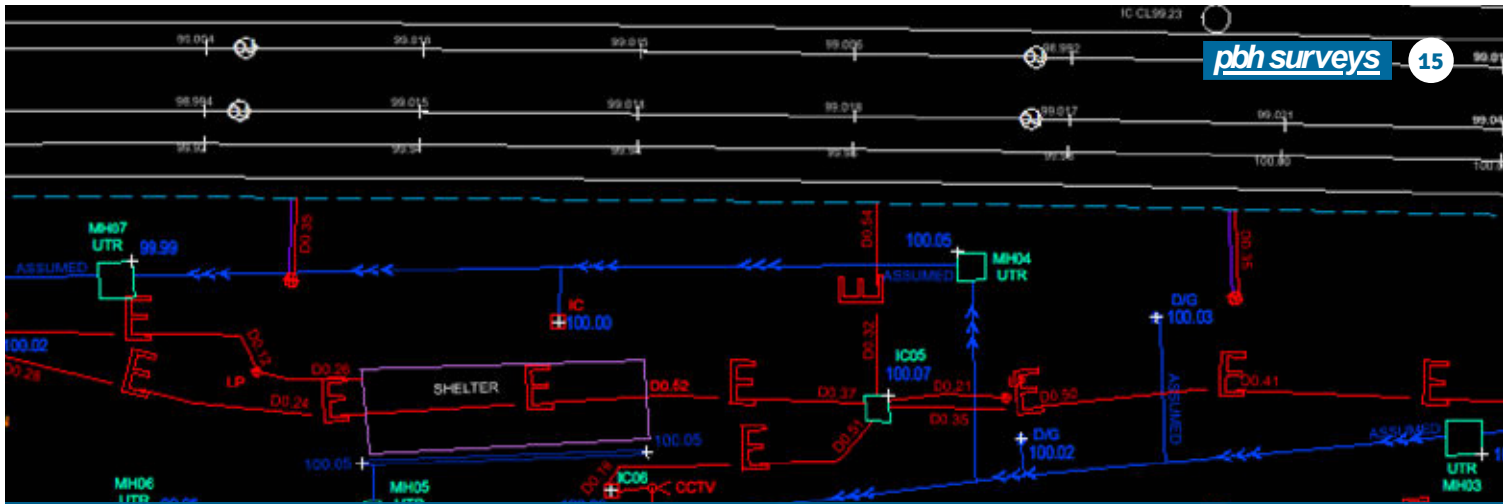
With extensive knowledge of track access planning requirements, our RISQS accredited planning team are fully trained and competent with the credentials needed to support delivery of all workstreams safely no matter how large or small. The experience of working nationally allows our team of qualified staff to provide a full spectrum of planning support services helping to deliver programmes of all sizes in all parts of the UK.

With almost 50 years' combined industry experience working with Network Rail Maintenance, Track Renewals and many principal contractors, we have helped to deliver programmes on behalf of all our clients, safely and on time. This experience has been utilised to improve processes and systems helping to maintain the highest quality in the most challenging circumstances. All our access planners are also trained and competent to ES, COSS, SWL1/2 and SSOW Planners enabling us to support programmes, ensuring a quality service is provided throughout the project lifecycle giving confidence in our knowledge of planning through to delivery of works on track.

PBH Planning have the capability to plan long and short-term track access using all resources available to ensure we keep your programme on track including published access within the Possession Planning System and line blockages via the Green Zone Access system. We pride ourselves on the production of quality safety critical paperwork compliant with NR/L2/OHS/019 to enable the safe delivery of all work on site. The knowledge and experience within our team allows PBH Planning to offer bespoke services enabling the planning and management of tailor-made programmes to suit your requirements and ensure a service of the highest standard, whilst being able to look at alternative approaches to help deliver the most challenging programmes.



The wealth of knowledge and experience within our team allows PBH to offer bespoke services



Utility Detection, Service Mapping and Drainage Surveys

PBH Surveys, in conjunction with trusted subcontractors, offer PAS128 compliant Utilities Surveys to allow designers to know what is potentially beneath them when preparing and working on a site. This can help mitigate potential issues when breaking ground or positioning large plant and machinery during construction works, which may cause damage to services passing through the site.



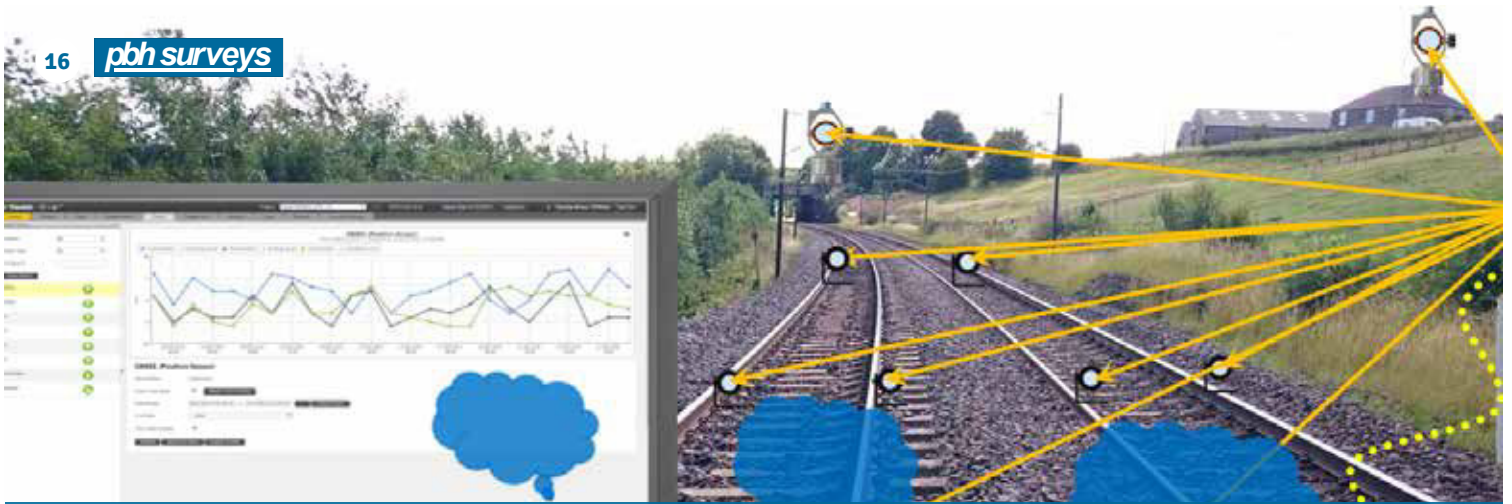
Before ground works are carried out contractors should be aware of what is beneath the surface, ensuring there are no hidden surprises when you break ground. Utilities Surveys can mitigate unforeseen costs and risks, using the latest detection techniques including Electromagnetic Detection, signal induced threading and Ground Penetrating Radar (GPR) to locate utilities.

Utilities surveys can reduce the hazards associated with ground works, save time and money and allow contractors to meet their legal requirement.

Drainage tracing and CCTV surveys provide a powerful tool for the validation of data collection and underground asset assessment without the need for confined space trained engineers to enter potentially hazardous areas.

Inverted P40

Utilities Surveys can mitigate unforeseen costs and risks




Track, Structural and Geotechnical Monitoring

At PBH, we provide a range of monitoring services which can be tailored to suit the requirements of our client. Utilising a range of techniques, we are currently involved in monitoring track, structures & embankments on the railway infrastructure throughout the UK. The techniques deployed on these projects range from traditional track monitoring using retro reflective targets & total stations, to automatic wireless mesh networks which can deliver movement information in real time via an online web portal.



Our tender stage consultation services aid our clients to consider monitoring provisions and solutions at the procurement and bid stages.

The PBH Monitoring team have close working relationships with several leading global suppliers of monitoring equipment to provide monitoring solutions through all stages of construction and maintenance.



Our tender stage consultation services aid our clients to consider monitoring provisions and solutions at the procurement and bid stages.



Technical Support

Complicated installations within time-constrained possessions are becoming ever more present on the railway infrastructure. PBH are well-positioned to provide all aspects of technical and engineering support to ensure that track and structures are put in the right place, safely, the first time, and every time.

Using the latest advances in track mounted survey technology our surveyors and engineers can give immediate feedback on installation versus design position accuracies.

Files can be generated real-time and fed to on-track plant to minimise downtime of expensive engineering resource. Using a wealth of both survey and rail experience our engineers can adapt in a time-sensitive and pressured environment to allow our clients to maintain programme.



All on-site technical support is backed up by on-call equipment suppliers and in-house experts.



All on-site technical support is backed up by on call equipment suppliers and in house experts



UAV surveys

UAV surveys collect data using small remotely piloted aircraft systems, otherwise known as unmanned aerial vehicles (UAVs). PBH UAV operational platforms can be legally flown in wind speeds up to 20mph, and at heights up to 400ft.

UAVs will be operated within line of sight of the pilot, or within 500m, whichever is the lesser of the two. PBH Surveys operate UAVs under a Permission for Commercial Operation (PfCO) with the Civil Aviation Authority (CAA), with permission to operate multi-rotors (<20kg).

The platforms currently utilised to carry out work is either –

- A) A multi rotor UAV with a payload operating a 100mp camera, or
- B) A multi roto UAV with a 20mp camera/HD .mp4 video recorded

UAV Surveys are a fantastic way to record orthomosaics and detailed 3D models of areas where poor quality, outdated or limited data is available.



Key Projects

pbh surveys

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- Overhead Line Height & Stagger Surveys
- 3D High Definition Laserscanning
- Coordinated Topographical Surveys
- Structure & Track Monitoring
- Control Networks
- Detailed S&C Surveys
- Gauge Clearance Surveys
- Drainage Surveys

Our **Key Projects**



Newton Heath Depot

Newton Heath was surveyed by PBH due to various concerns raised by the Depot Manager regarding the condition of the structure, therefore a survey was required to assess what repairs were needed to be undertaken. PBH installed and coordinated a new grid tied to Snake Grid TPEN11 utilising 6-hour GNSS observations as per the Northern Programmes standard.

A mix of traditional topographical survey, UAV survey and terrestrial laser scanning was undertaken in order to deliver this project in the most efficient manner. The final deliverables were delivered to LOD300 standard along with our usual 3d dgn, registered point cloud and full NR3100 standard survey report. A flythrough of the site was created in order to assist the client with their design from the comfort of their own desk, minimising the need for further site walkouts.



Central Rail Systems Alliance Plain Line Renewals – Eastern, Central & Western

We are delivering Plain Line survey and designs across Eastern, Central and Western Regions for CRSA. With our in-house Planning, Survey, Track Design and OLE Design teams it allows us to ensure we meet the demanding delivery timescales required by the alliance to meet their core work delivery dates

Our Key Projects



Kilsby Tunnel

Due to the COVID-19 Pandemic, Network Rail realised that due to a reduced train service, a potential blockade could be secured on the West Coast Mainline covering Kilsby Tunnel to undertake the renewal of 800 yards of drainage and 870 yards of track.

PBH got the call 10 days before the blockade was due to start, requesting a full survey and design. PBH mobilised survey resource to complete the survey over one weekend night shift, processed the data and delivered to the design team within 3 days. The design team turned the design around within a week in time for the renewal to start.



Central Rail Systems Alliance S&C

PBH is delivering detailed S&C surveys for the CRSA Alliance across multiple regions. PBH undertake all access planning, paperwork and Safety Critical Staff for the client to ensure efficient delivery of both surveys and client design.

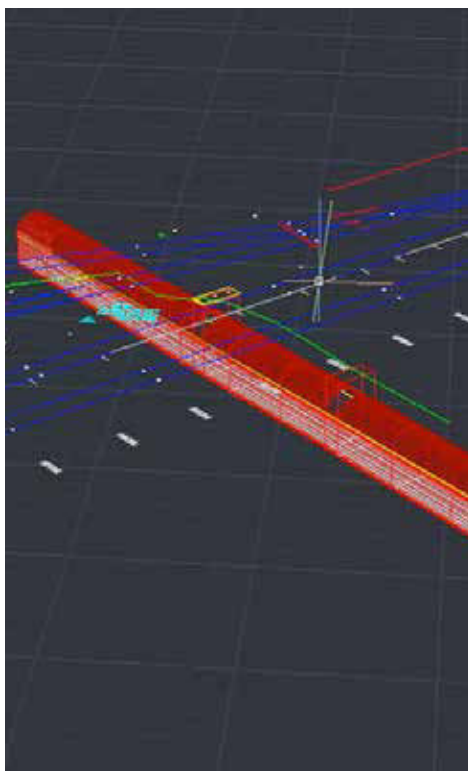
A large percentage of PBH's staff have extensive experience in this type of work which is demonstrated by our capacity to supply the large amount of survey data that is required when renewing S&C. Our regional based survey teams and internal planning resource services allow any changes to the delivery programme to be actioned quickly and safely.

Our Key Projects

LNE/LNW 18/19 Plain Line Renewal

PBH Rail is delivering all of the 18/19 Plain Line surveys across LNE/LNW on time to an exceptional quality. This is the third year of carrying out this work and through our close working relationship with the client we have been able to refine our deliverables to meet the expectations of the client's OLE design team and our own internal permanent way design team.

Most of PBH's staff have over 5 years of experience in this type of work which is demonstrated by our capacity to supply the large amount of survey data that is needed for the Plain Line contract across LNE and LNW regions, with a designated survey and design resource to deliver. Our regional based survey teams and internal planning resource services are often called upon to assist with late changes to the delivery programme to ensure that planned renewals always go ahead.



Preston to Blackpool Control Validation Drainage and DVS Surveys;

PBH are currently re-coordinating and carrying out a control validation survey for 17 miles between Preston to Blackpool North Station. The control network is being upgraded from Network Rails 3100 & 3101 standards to Network Rails Northern Programs Survey Strategy. The increased accuracy has been achieved by utilising a combination of GNSS static receivers, Trimble 0.5" total stations and levelling equipment to validate existing GNSS points, traverse the route and check levelling of the route. The resultant work has allowed an upgrade in the existing grid from a traverse closure of 1:50,000 to the new required 1:100,000 traverse closure.

Our Key Projects

Emergency Works

PBH Surveys utilise Trimble's "Connected Community" system which directly uploads all completed survey data on to a server for instant access for the processing teams in the office. The system allows the processing teams to work on survey data as soon as it arrives on our servers.

Derailment sites require immediate survey and deliverable of data for the track to be reinstated once the derailed train had been removed. With the "Connected Community" system site work can be immediately transferred via a mobile hotspot to the office allowing the processing team to process and deliver the project to designers within a four-hour timeframe from completion of site work.



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