

Version B1

West Berkshire Council
Permit Scheme
Year 6 Evaluation

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Foreword

West Berkshire is part of the Thames Valley which is recognised as the most dynamic and competitive sub-regional economy in the UK. In terms of transport the location on West Berkshire within the Thames Valley is important due to the M4, rail corridor and access to Heathrow Airport and London.

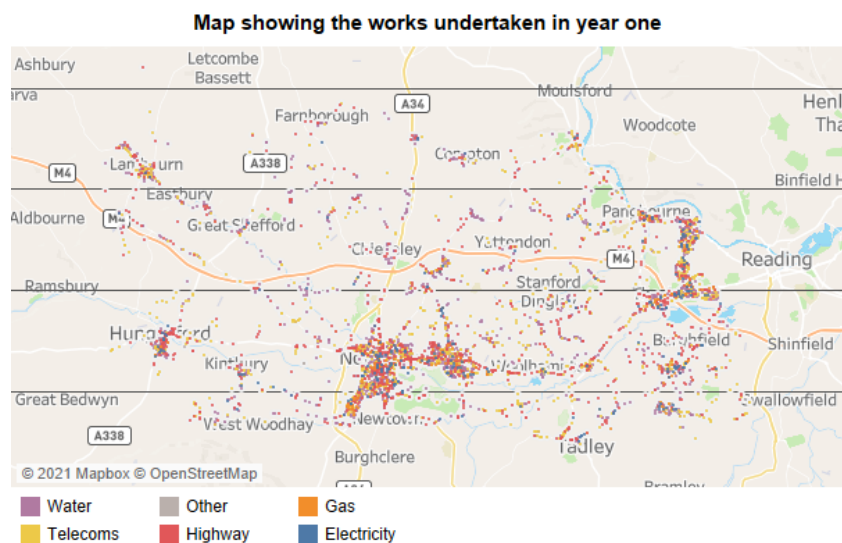
The districts position in central southern England and its good links to the transport network have been key factors in West Berkshire's success at attracting businesses to the area. Consequently the area has experienced continued economic and population growth, which has resulted in more journeys being made.

A major challenge for West Berkshire will be accepting the substantial movement of people and freight through, and within, the area and to capitalise on the economic benefits that major transportation interchanges offer whilst balancing social and environmental factors.

In the 2009 place survey, 40% of people responding considered that the level of traffic congestion in West Berkshire needed improving.

Against this backdrop it is imperative that West Berkshire Council protects the ability for residents and visitors alike, to move around the road network and enjoy what the area has to offer. It is equally important that businesses, including public transport operators, are able to operate efficiently without congestion impacting on their operations. Consequently the Council is committed to reducing congestion and managing the road network more efficiently resulting in minimum disruption and delay.

It is recognised that the way to tackle congestion lies with both the optimisation of the road network and the encouragement of non-car modes of travel, such as cycling, walking and use of public transport. By promoting this approach to Network Management, West Berkshire Council is working towards its vision of delivering effective transport solutions for all by increasing choice and minimising congestion.



Key Findings



9,286 applications to process per year (10)



6,385 works undertaken across West Berkshire per year(11)



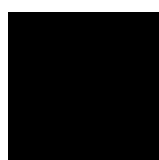
35,000 days with highway occupation per year(12)



19 works starting every day of the year (11)



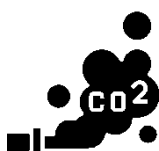
50% of works undertaken with a permit condition in (25)



Average cost impact from work on the carriageway of £671 per day of work (37)



Annual scheme benefits of £783,514 (38)



Annual carbon emission savings of 691 tonnes CO2 from reduced delays (39)

Unless stated otherwise, figures quoted are based on the rounded average across the six operational years of the permit scheme. The figure in brackets represents the page number where the relevant figure is explained.

Executive Summary

Legislation context

In 1991 the New Roads and Street Works Act (NRSWA) placed a duty on the Council, as a highway authority, *to coordinate activities (works) of all kinds on the highway under the control of that Authority.*

In 2004 the Traffic Management Act (TMA) and associated secondary legislation widened the NRSWA coordination duty. The scope of this increased duty has the following main considerations and Part 3 of the TMA allows for an Authority [Council] to introduce a permit scheme to support the delivery of this duty.

- manage the road space for all users;
- identify current and future causes of congestion, and to plan and act accordingly;
- take a proactive approach to the coordination of works on the road, including unplanned emergency works;
- gather and publish accurate information about planned works and events;
- manage unforeseen incidents and events on the network;
- establish and implement contingency plans for incidents and issues; and
- manage cross-border network travel and demands.

The role of a permit scheme

The fundamental objective of a permit scheme is to create a common procedure to control activities on the highway. It is essential that all activities in the highway are effectively coordinated and managed to ensure that traffic disruption and inconvenience is minimised whilst allowing the Promoters of those activities, such as utility companies or the Council, the necessary time and space to complete their work.

Under the NRSWA organisations intending to carry out work on the highway notify the Council of their intention to carry out these works. The Council has powers to provide direction to these works and apply penalties for non-compliance, such as for instances where the works are not carried out according to the notice served.

The powers under a permit scheme enable the Council to take a more active involvement in the planning and coordination of works, from the initial planning stages through to completion. This includes:

- organisations book occupation for work instead of giving notice, essentially obtaining a permit for their works;
- any variation to the work needs to be agreed, before and after works have started, including extensions to the duration;
- the Council can apply conditions to work to impose constraints; and
- sanctions with fixed penalty notices for working without a permit or in breach of conditions (of the permit).

In March 2015 the Council introduced the **West Berkshire Council Permit Scheme**. The scheme was brought into legal effect through an Order created by the Council under the provisions of the Traffic Management Permit Scheme (England) Regulations.

Regulatory requirement for a permit scheme evaluation

An amendment to the 2007 Permit Scheme Regulations introduced new regulation (16A) which makes a provision for the content and timing of permit scheme evaluations

This regulation states that permit schemes [should] be evaluated following the first, second and third anniversary of the scheme's commencement and then following every third anniversary. The regulation further states that, in its evaluation, the Permit Authority [Council] shall include consideration of:

whether the fee structure needs to be changed in light of any surplus or deficit;

the costs and benefits (whether or not financial) of operating the scheme; and

whether the permit scheme is meeting key performance indicators where these are set out in the Guidance.

This report has been developed by the Council to provide an evaluation for year one of the Permit Scheme and includes the provisions set out within the regulations.

The regulations reference key performance indicators set out in the Guidance – where the Guidance is the Statutory Guidance for Highway Authority Permit Schemes (July 2020 latest edition).

The Guidance reiterates the requirement from the regulations, adding each scheme evaluation must be made available to stakeholders (those consulted at the scheme development stage, as set out in Regulation 3) within three months of the date on which the evaluation was due.

In addition, Annex A of the Guidance contains a list of Key Performance Indicators, as below:

- TPI 1 Works Phases Started (Base Data)
- TPI2 Works Phases Completed (Base Data)
- TPI3 Days of Occupancy Phases Completed
- TPI4 Average Duration of Works
- TPI5 Phases Completed involving Overrun
- TPI6 Number of deemed permit applications
- TPI7 Number of Phase One Permanent Registrations

To complement the Guidance, HAUC (England) has issued its guidance document for the Operation of Permit Schemes (August 2020). Similar to the Statutory Guidance, the HAUC Guidance reiterates the legislative requirement.

Section 14 of refers to a HAUC England Report template available on their website, however the HAUC UK website is currently unavailable and under development. The Key Performance Indicators do not include any target values or accepted level of performance, therefore an acceptable level is assumed for all measures.

Summary of the Year 1 analysis

Work applications

Leading up to the start of the scheme and into the first two years several utility sectors and highways were undertaking project specific activities, *such as telecoms BroadBand UK fibre rollout and gas main replacement*. As such, the level of applications decreased following year two returning to similar pre-Scheme levels for planned works, *such as routine maintenance and new service connections*.

The decrease in applications received is uniform across all Promoter sectors, with an average 80% of applications resulting in work undertaken. The remainder of applications are either cancelled or never progress to a work start.

The application lead time for planned work (where these are submitted within the prescribed minimum lead time) are increasing under a permit scheme. The most noticeable increase is for the high-volume minor work, with the average lead time now double the prescribed minimum.

There is also noticeable improvement in the applications received within the minimum lead time comparing the pre-Scheme years (56% in year 2012/13), to years one and two (77% in year 2016/17), and then from year three (84% in 2020/21). It can be assumed that the requirement for a Promoter to obtain approval for works before committing their resources must influence this change, and therefore be a positive benefit of the permit scheme.

Adherence to the minimum lead times and an increase in the average these times not only provides opportunity to coordinate works effectively, but also provides advance warning to road users and other impacted parties, *typically online via one.network or advanced warning boards*.

Work undertaken

In line with applications received, the volume of work undertaken has fallen since the start of the Scheme, and in year six returned to a similar pre-Scheme level (2012/13). Analysis shows a significant increase in the overall volume of Major activity (scheme) works during years one and two as a proportion of the total.

This increase has had a direct impact to the overall duration of works, with c.55,000 days of occupation in year one, decreasingly steadily to c.19,000 in year six – the latter volume being less than pre-Scheme years. Analysis shows that the volume of works returned to a level of expected normality in year six.

There were changes for each sector during the six years of analysis:

- Electricity major asset works came to a completion in year one and returned to an expected level of normality from years two through six. In a typical year the proportion of emergency or urgent works ranges from 47% to 65% (of total works).
- Gas mains replacement works were already underway at the start of the scheme and continued into year five. The overall duration of gas works decreased significantly in year six, to an expected level of normality.
- Highways major work programmes were underway the start of the Scheme and came to a competition in year two. From year one to two there was a dramatic decrease in the total duration of highway works (26,998 days to 8, 4444 days). From year three there has been a steady increase in the volume of highways works, reaching 3,788 in year six.

- Telecoms major project works reached their peak in year one and completed in year four, returning to a level of normality in year five.
- Water works have seen a steady decrease in total duration since year two (13,020 days) to year six (8,446). Unplanned emergency or urgent works accounts for the most significant proportion of these works, 51% in year six.

For both electricity and water works the Council need to focus attention on the Immediate works to ensure these are genuine emergency and urgent works, and their duration is kept to a minimum wherever possible, especially when unplanned traffic control impacting the road user is in use.

For all planned work categories, the average duration of works has decreased under a permit scheme. Unplanned Immediate work has seen the biggest decrease in average duration, which is positive. Although this trend cannot be directly attributed to the introduction of a permit scheme, it is fair to assume an influence to working behaviours.

Work exceeding planned duration increased at the start of the Scheme, and since year three has reduced to below pre-Scheme levels. The volume of additional unplanned duration has also noticeably decrease, which is a very positive change.

Traffic control used for works has changed since the introduction of the Scheme, with more work being undertaken under a form of positive traffic control instead of 'some' or 'no' carriageway incursion. This could be viewed as a dis-benefit of the Scheme, however ensuring that works are carried out in accordance with Safety Codes is essential for both the workers and road users. In addition, the Council can ensure the coordination takes into consideration the entire worksite, *including vehicles, working plant and materials*, and all these elements are within a safe working zone or away from the operational highway.

Work coordination

On average the Council accepts (grants) 86% of permit applications. Where an application is rejected analysis of responses codes issued for years four to six shows the reasons being clash of other works, location issues, or the proposed traffic management arrangements.

In year six there were 27 works involving a form of collaboration, amounting to 203 days of work. Most of these works were collaboration between individual highway departments. Collaboration between Promoters is an industry wide challenge. Analysis of response codes for refusals show none issued for collaboration opportunities, which reflects the Councils view that issuing these is not worthwhile as the likelihood of a result is low. It is however recommended that the Council issue these whenever possible. As a minimum this will provide opportunity for further analysis of potential collaboration opportunities and whether they are being realised or not.

Analysis of work with a duration decrease between the initial application and work start shows a peak in year three (233 works and 2,383 days reduction) and a steady decrease to year six (53 works and 181 days reduction). Analysis of response codes show few refusals being issued for 'excessive duration'. This is not being considered as a negative as there may be few instances where the planned duration is excessive, however the Council should endeavour to issue a refusal for any work where the duration seems excessive or could be challenged. As with collaboration opportunities this will provide opportunity for further detailed analysis.

Permit variations issued by the Promoter have steadily increased since year one, with a decrease in year six. On average 14% of variations are granted by the Council.

Variations requesting a duration extension have remained broadly similar and on average 98% of these are granted. This would reflect the industry process to accept any duration extension, to ensure the work is undertaken with a valid permit and apply NRSWA section 74 overrun penalty charges for those works where the reason for the extension is not acceptable.

Permit conditions

In year six 60% of works undertaken had an **applied** permit condition – the average across all six years of the permit scheme is 50% of works. Analysis shows that the main uses for permit conditions are:

- To control the timing of works;
- To specify the road space available for the works and the space available to traffic;
- To specify the manual control of temporary traffic lights at peak times; and
- To specify the removal of temporary traffic lights from site when no longer in use.

Further analysis shows that in year six the Council are still requesting that Promoters add conditions on their permit not included on the initial application. These conditions are worksite specific instead of a blanket-approach, specific examples of conditions added include:

- 50% of the conditions to specific manual control of traffic lights
- 39% of conditions for storage of surplus materials and plant
- 89% of conditions to limit activities for the environment (noise)

In addition, conditions not relevant to the work are being included on permit applications and the Council requests that these are removed. As such, analysis shows some conditions being removed during the application stage. Overall, the Council can demonstrate that conditions are being applied to works, sometimes under their direction, however the ongoing review of when and how these conditions are applied and to best effect is recommended.

Permit compliance

Offences for working without a permit started high in year one (371) which is to be expected at the start of a new scheme. There has been a steady increase in the number of these offences from year four, which is because of increased onsite inspections, not necessarily an increase in the proportion of works without a valid permit.

Inspections for permit conditions dropped during years three through five because of a high turnover of staff. There was an increase in year six inspections undertaken, with 92% passing (compliance). As such, since year four the volume of offences for breach of permit condition has increased (from 679 to 1,284).

Cost and benefits

Since the previous evaluation of income and costs, from year four the Council has been operating at a sustained deficit (c.£67,000 average per year). The income from permit fees decreased in year six which is expected to be an ongoing reduction. In consideration to this and the intention to increase staff within the Street Works team the Council will need to undertake a review of permit fee levels and then a formal consultation to amend the Scheme.

The cost-benefit-analysis undertaken for this evaluation shows an average annual permit scheme benefit of £783, 514, which provides a benefit to cost-ratio of 5.3 – this demonstrates very high value for money for the Scheme. This analysis is based on the actual cost of operating the scheme, not the deficit in income, so any increase to recover this cost is included in the analysis. With a strong benefit-to-cost ratio, any further increase in cost should not impact the overall benefits case for the Scheme.

Conclusion

In summary, West Berkshire Council has a well-established permit scheme, which is being operated efficiently. Staff retention and recruitment has impacted the overall capability and performance in some areas during years three to five, which has been addressed for year six. Future recruitment should continue to improve the Councils capability to operate an effective Scheme.

It could be suggested that after six years of operating a permit scheme the Council could reduce their resources and cut back on the cost as Promoters would have naturally changed their ways of working. The evaluation clearly shows that this is not the situation.

In year six the Council is still refusing applications, adding conditions to permits, processing requests to vary a permit, *including duration extensions*, from Promoters. In addition, year six analysis shows that as more inspections are undertaken by the Council more works without a permit or in breach of a permit condition are identified.

There are several areas where the Council can focus their attention over the next 2-3 years to improve the operation of the Scheme and compliance by the Promoters. With an ever-increasing need for the road space, both from road users and those working on their assets, the role of the Scheme is not diminishing.

Looking to the future, opportunities arising from other schemes, *such as lane rental*, become options the Council should consider. In consideration to some areas of performance, such as low levels of collaboration between Promoters and the disregard to applied permit conditions, the need for higher financial incentives may be required. As the Council can demonstrate that they are effectively operating a permit scheme, but several challenges and issues remain there could be a strong business case to introduce a lane rental scheme.

Evaluation Methodology

Source data for analysis

This evaluation uses data collected from both Street Manager and the Council's system to process and record works. The data collected contains the content of notifications sent between Promoters undertaking work, *such as utility companies*, and the Council.

Analysis of these notifications enables the Council to produce metrics for performance indicators and further measures. For some measures aggregating data for analysis does not provide an accurate picture of the results, *for example for the analysis of all work durations can provide a falsely inflated picture of changes over time*. This evaluation therefore delineates many of the measures into sub-categories, *such as works category*, to provide a more accurate result and trend.

Many of the measure contained in this evaluation were analysed with sub-categories to ensure accuracy in the results. These have not all been included within this evaluation report; however, it should be accepted that any findings presented have been tested for certainty and any anomalies investigated and defined.

Work phases

In this evaluation work is analysed in logical phases. A work is typically identified by a work reference number, which often applies to multiple phases of work, for example a work reference number may contain the following phases:

- A work with a temporary reinstatement
- A follow-up work changing the temporary reinstatement to a permanent reinstatement
- A defect work to rectify a fault with the permanent reinstatement.

To logically delineate work phases, a phase is identified from the initial application through to work completion notices within the same work reference. Therefore, the analysis shown for work in this evaluation is for a work phase, *i.e. the total works undertaken are the total work phases undertaken*.

Duration analysis and adjustment

Analysis of works duration is calculated using the dates provided within the work start and work stop notifications, inclusive of these dates. As a result of incorrect dates on notices from Promoters spurious durations can be found within the extracted data, such as work with a negative duration, created where the supplied end date is before the start date, or work with a significantly high duration.

Analysis of work duration is essential for this evaluation, for both an assessment of changes in work duration and to calculate a work impact cost (impact to society). Therefore, a process to cleanse duration involving the following 3 steps is undertaken. If the actual duration does not meet the criteria below then the duration is not revised.

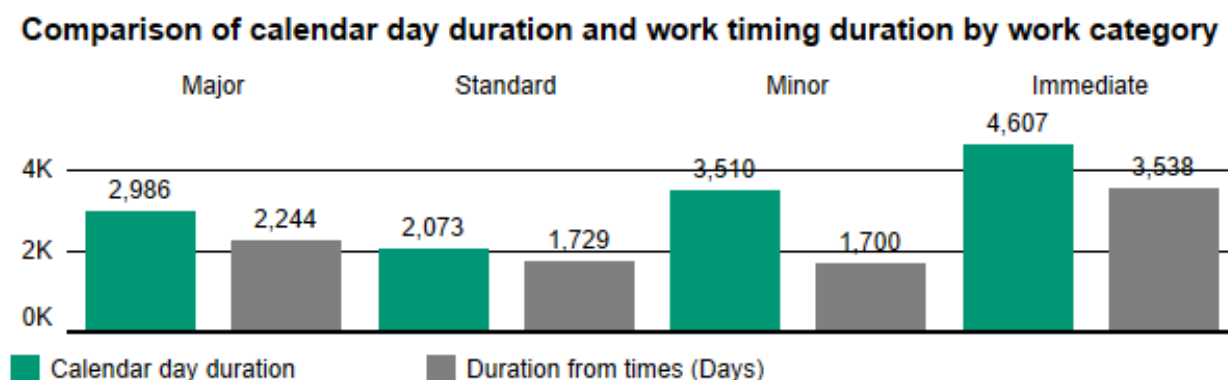
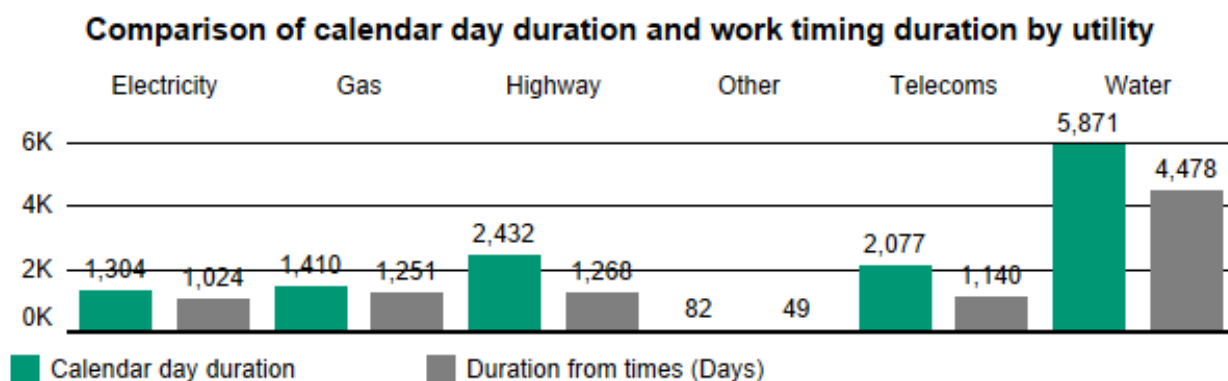
- Where an actual duration is a negative value, then this is replaced with the planned duration;

- In the case of 1. if a planned duration is also a negative value, then a default value for the works category is used; and
- Where the actual duration is more than 50% greater than the planned duration and the difference is more than a set value, based on the work category, then the duration is revised using the planned duration.

Since the introduction of the DfT’s digital service for the management of roadworks (Street Manager) and associated regulatory changes from 1st July 2020, information related to the timing of works, *i.e. start time and stop time*, has improved. As such since the introduction of Street Manager it is possible to measure and analyse durations closer to actual time than to a day period.

Analysis of total duration based on the notice dates (whole calendar day) and notice times shows that there can be noticeable differences between these two types of measure.

The charts **Comparison of calendar day duration and work timing duration by utility** and **Comparison of calendar day duration and work timing duration by work category** show the differences between a calculated total work duration using the dates (calendar day) and times contained in the work start and work stop notices (legend). The charts show each comparison either by utility (top) or work category (bottom).



For this evaluation, analysis of work duration and trend is predominantly based on dates of the work notices, not timings, as the pre-scheme historic data does not contain accurate timings. Future evaluations may contain analysis based on timing once the data range has increased over time. In addition, the use of activity type also introduced by Street Manager can be useful to consider the durations of specific activity and whether these are changing over time or remaining within accepted tolerances.

This report contains analysis of duration based on time wherever possible, however for a complete analysis of operational year one and to analyse results compared to previous years it is not possible to effectively use this. It is anticipated that future operating years will use analysis of duration based on work timings time, across far more effectively.

Economic cost-benefit analysis

A cost-benefit analysis (CBA) provides a framework in which the impact of a scheme can be compared against the cost of setting up and operating the scheme. Annual evaluation of the Permit Scheme CBA provides opportunity to review the value of the scheme with the benefit of the outturn scheme operating costs and revenues, updated estimates of the societal impact of work and to compare this not operating a permit scheme.

The approach to the permit scheme CBA is as follows:

- identify the scale and characteristics and quantify the scale of societal impact these works will have had to the residents and local economy;
- estimate the reduction in impact resulting from the permit scheme and quantify the social benefit of this reduction;
- identify the cost of setting up and operating the permit scheme; and
- undertake the cost benefit analysis to determine the benefit to cost ratio and net present value delivered by the scheme.

The societal impact of each work is estimated based on impact calculations derived from the **QUEUES AND DELAYS AT ROADWORKS** (QUADRO) model. QUADRO was originally developed for the DfT and designed to assess and monetize the impact of delays due to works. QUADRO is currently maintained by Highways England.

QUADRO captures loss of time to travellers, increased vehicle operating costs because of idling in queues and/or diversion, vehicle emissions and accident impacts. Impact modelling is based on local traffic flow data (within the Council's boundary), disaggregated by road type, to provide locally relevant impact values.

Period of analysis

Throughout this evaluation there is a reference to operating years based on the permit scheme years. As the permit scheme came into legal effect on 1st March 2015 year one is between 1st March 2015 and 29th February 2016. The operating years before the scheme came into legal effect are show as negative years, i.e. Y-1 covers the period 1st March 2014 to 28th February March 2015.

Defining Promoters

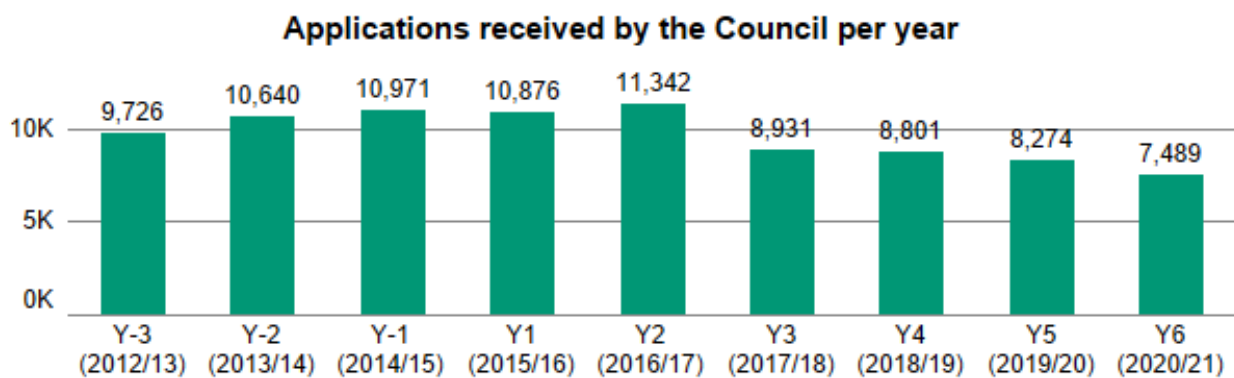
Within this evaluation Promoters can be defined by their utility type, e.g. water. The Promoter type Highway Authority is included in this definition, as works for road purposes. The utility type Other includes other organisations who needs to undertake works on the highway, such as Network Rail who account for c.60% of works within this type.

Analysis of Work Applications

All **registerable works** require an application to the Council to obtain a permit. Prior to the introduction of the permit scheme, the Council was notified of these works.

Throughout this evaluation the term **application** refers to both the initial **notice** for a work, the application for a **Provisional Advanced Authorisation (PAA)** or **permit** unless stated otherwise. Non-statutory forward planning notices are not included in this evaluation.

The chart and table **Applications received by the Council per year** shows the volume of applications (initial notices or permits) received for each operational year delineated by work category (table).



Work Category	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Major	2,033	4,116	1,554	1,101	1,396	1,232
Standard	834	609	796	644	603	529
Minor	5,963	5,216	5,068	5,225	4,714	4,121
Immediate	2,046	1,401	1,513	1,831	1,561	1,607
Total	10,876	11,342	8,931	8,801	8,274	7,489

The volume of applications received by the Council has been steadily declining since the second year of the permit scheme. As shown within the section **Analysis of Work Coordination** this directly relates to a reduction in work phases undertaken. Further analysis shows an overall increase in the volume of applications used for work, instead of remaining unused or cancelled.

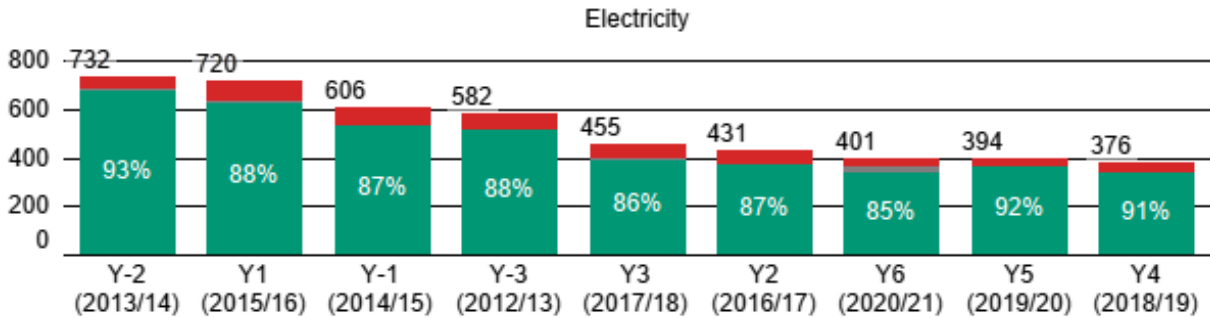
Further analysis of applications per utility (below) show that the electricity, gas, water and other sectors generally remain fairly stable over the life of the permit scheme after year 1. Work in the telecoms sector increased in years 2 and 3, which can be associated to national projects for infrastructure improvement and updates.

Highway work increased in the first two years of the scheme compared with previous pre-scheme volumes. Further analysis of the final status for each applications shows that there was a significant volume of permits not used for work (remained at the planned stage) or cancelled in years 2 to 4 which would indicate a period of adjustment in the early years with the planning and application process under a permit regime. Since then, the volume of applications has been rising steadily with a lower percent of cancelled or unused applications.

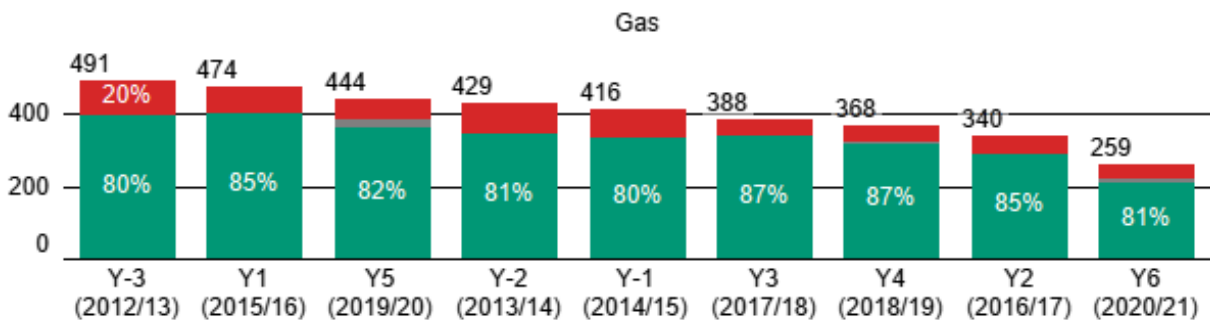
The chart(s) **Applications received by the Council for [utility] works per year** shows the volume of applications received per utility and the final status of each application as a percent of the total (legend).

Cancelled Planned Work Work Undertaken

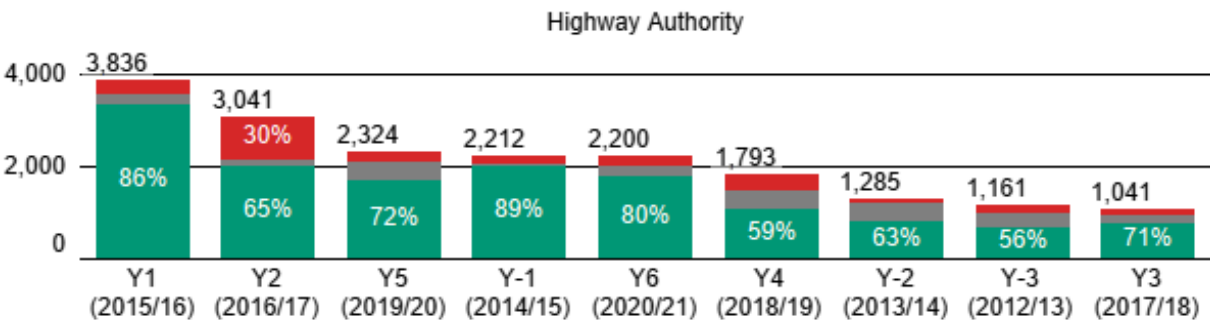
Applications received by the Council for Electricity works per year



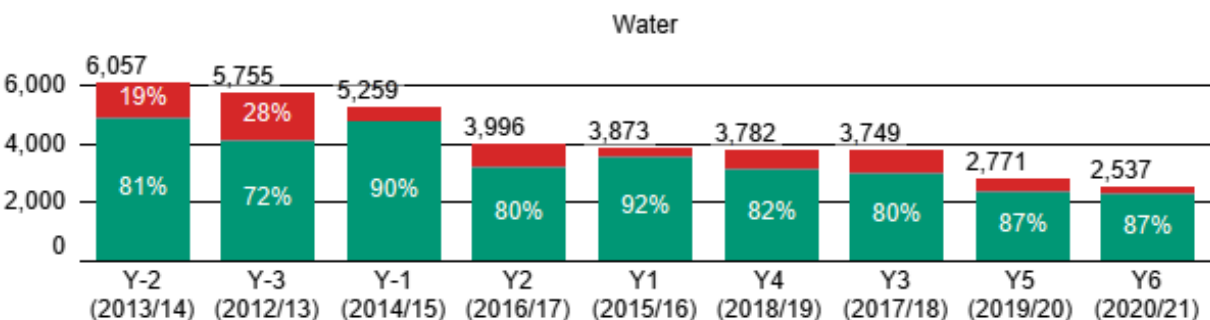
Applications received by the Council for Gas works per year

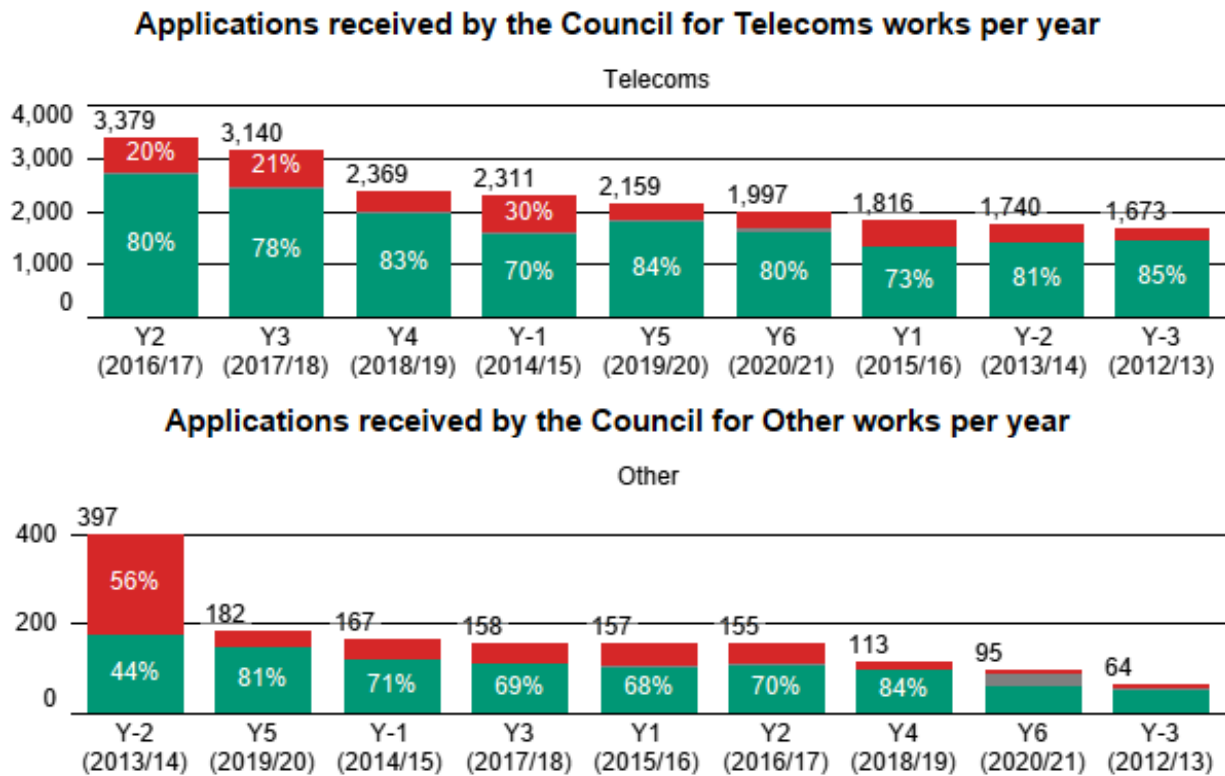


Applications received by the Council for Highway Authority works per year



Applications received by the Council for Water works per year





Application lead time

For the Council to effectively carry out the coordination of works, including the advanced publicity of works, it is essential that applications are submitted with sufficient lead time based on the work category, as set out within primary legislation.

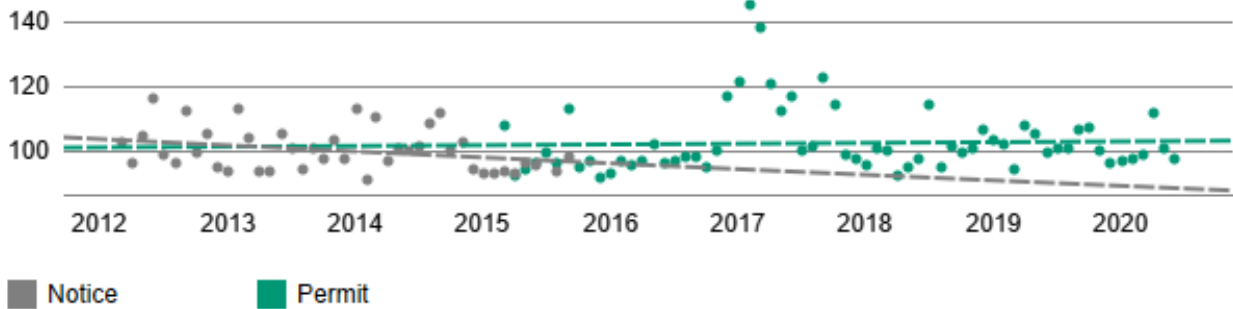
- Major and Standard work requires an application lead time of 10 working days prior to the proposed work start date. Major work also requires a 3-month advanced notice, which becomes a provisional advanced authorisation under a permit scheme.
- Minor works require 3 working days lead time.
- Immediate works can be submitted after works start and must be received within 2 hours of works start or by 10:00 on the next working day if work started outside of non-working hours.

To reduce any anomalies for the analysis of lead times only applications with a lead time between 1 and 100 days for notices and permits and 1 to 250 days for major works advanced notice or PAA were included.

The charts below show the aggregate average application lead time across the period of analysis, together with a linear trend model (line) which is computed from a natural log of lead time for each of the observed 51 points (months). The analysis only includes applications that were submitted in time – applications not submitted in time is shown within the Early start agreements section.

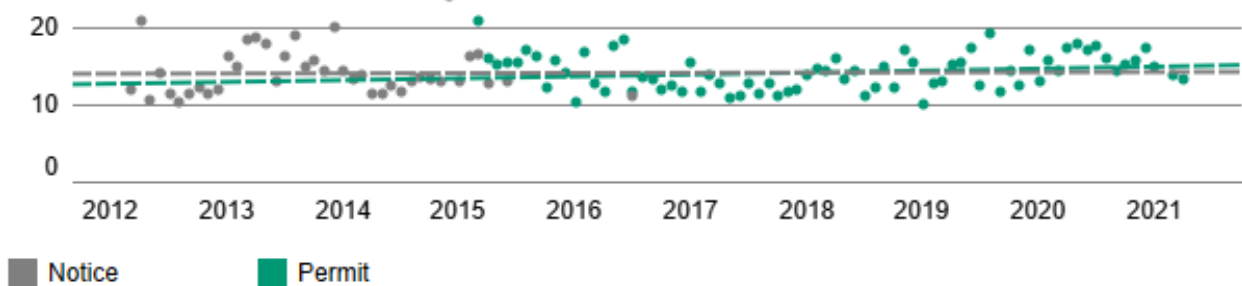
*The chart **Average advanced notice or PAA lead time for Major work** shows lead time (calendar days) for an advanced 3-month notice or a PAA for the Major works across the operational years of analysis. Applications are delineated into notice and PAA to compare the two different regimes (legend).*

Average advanced notice or PAA lead time for Major work

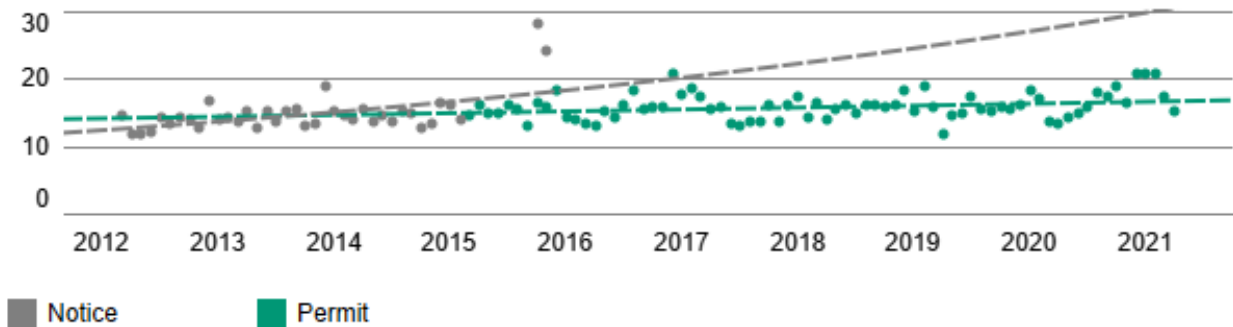


The chart **Average application lead time for [work category]** shows lead time (working days) for either a notice or permit (legend) application for the specified work category across the operational years of analysis.

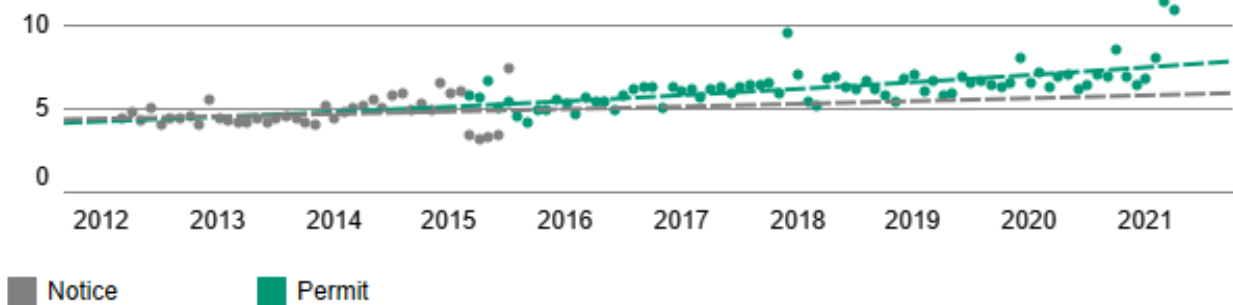
Average application lead time for Major work



Average application lead time for Standard work



Average application lead time for Minor work



Across the period of analysis the application lead times, both under a notice and permit regime, have remained above the minimum specified times. Under a permit regime applications for PAAs for major works have remained, whereas under a notice regime they were shown an overall trend to decrease.

For the high-volume minor work the application lead time has increased under a permit scheme, to almost double the minimum lead time, which is very positive outcome. This may reflect the need to obtain a permit prior to starting work and Promoters wanting certainty work can be scheduled before committing any resources.

Publicity of works

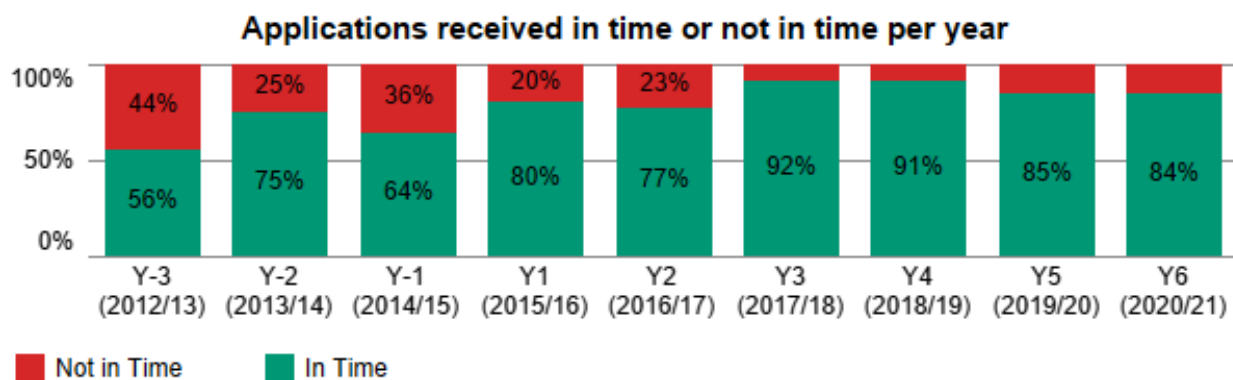
The Council publishes all planned and active works through a public facing website one.network, which is the most comprehensive source of roadworks, road closures and other live and planned traffic disruption information in the UK. Through the one.network platform the Council can inform the road users and all interested parties on the advanced warning and status of works. A work will appear on one.network as soon as it is received, so it is therefore essential for works to be given the earliest visibility to the public through application lead times.

Early start agreements

When a Promoter wishes to start planned work without providing the minimum lead time (for that work category) the Council has the discretion to allow an early start, *i.e. agreeing for the Promoter to provide less than the minimum lead time.*

There are many valid reasons why a Promoter may require this early start, *such as the availability of resources or changes to customer demands*, however the Council must get a balance between valid reasons for an early start and impact on the network and discouraging the poor planning of work.

The chart **Applications received in time or not in time per year** shows the proportion of applications received in time or not in time (legend) in accordance with the minimum lead time (for the relevant work category) for each operational year.



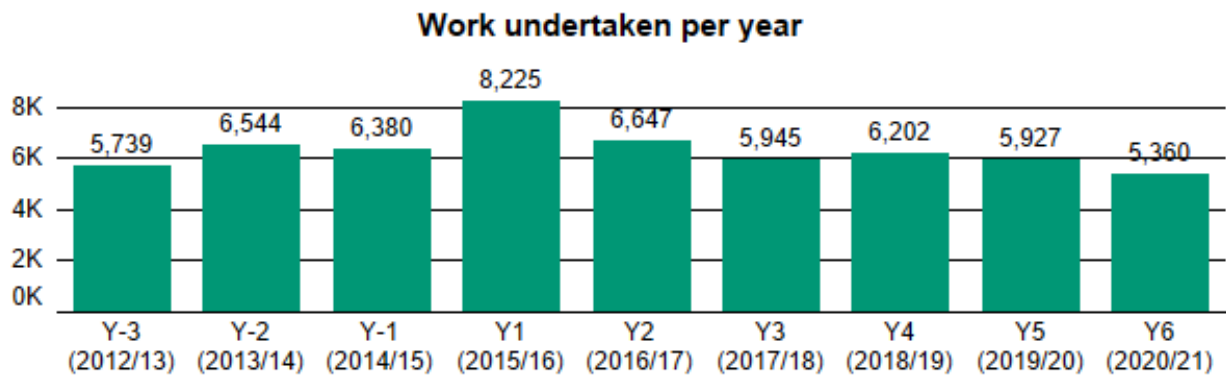
After the introduction of a permit scheme there was an overall improvement in the volume of applications being submitted in time, compared to a notice regime. However since year 3 of the scheme this has improved further. To enable the most effective coordination of work, including any advanced publicity or engagement with impacted parties, this is a very positive outcome from the introduction of a permit scheme.

Analysis of Work Undertaken

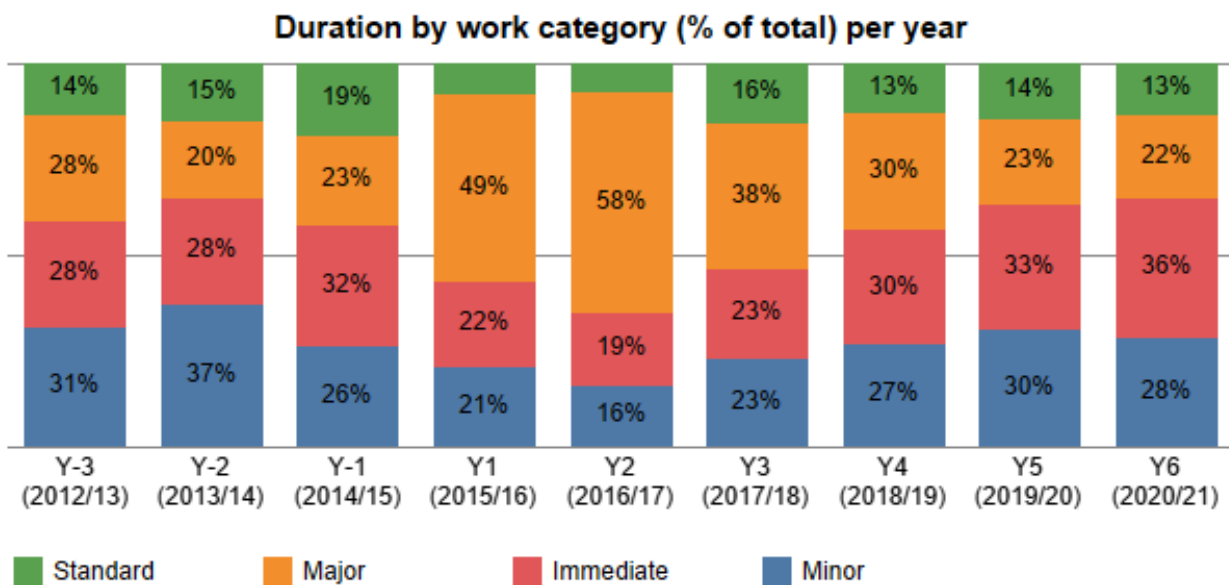
Definition of work undertaken

Works are only treated as ‘undertaken’ when they have reached a stage of ‘in progress’, i.e. work has actually started. Not all applications for work or where a permit has been obtained (granted) result in work undertaken.

The chart **Work undertaken per year** shows the volume of work phases undertaken per year.



The chart **Duration by work category (% of total) per year** shows a breakdown on the total duration of work, by work category (legend) for each year.



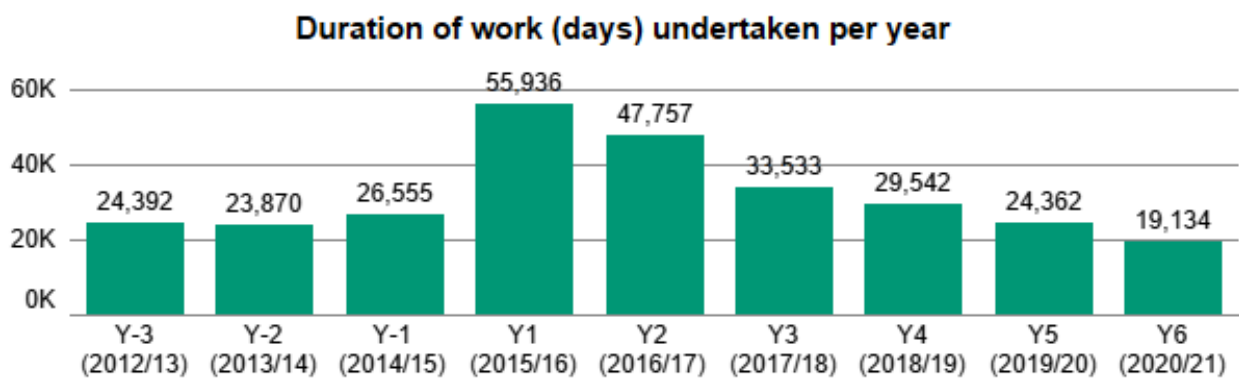
There has been a steadily decline in work undertaken since the start of the permit scheme, with levels returning to pre-scheme volumes. As shown in the duration by work category analysis, over the period 2015 to 2018 there was an increase in Major work, which would account for the overall increase in work undertaken and duration. Further analysis of work duration (refer to section below) shows that these works were predominantly for Gas and Telecoms works.

Work duration

Analysis of work duration is based on work undertaken only. Durations are calculated in whole calendar days, however in reality a work, *such as an asset inspection or pothole repair*, may only take a few minutes or hours. It is not possible to accurately determine these timings from works data before July 2021.

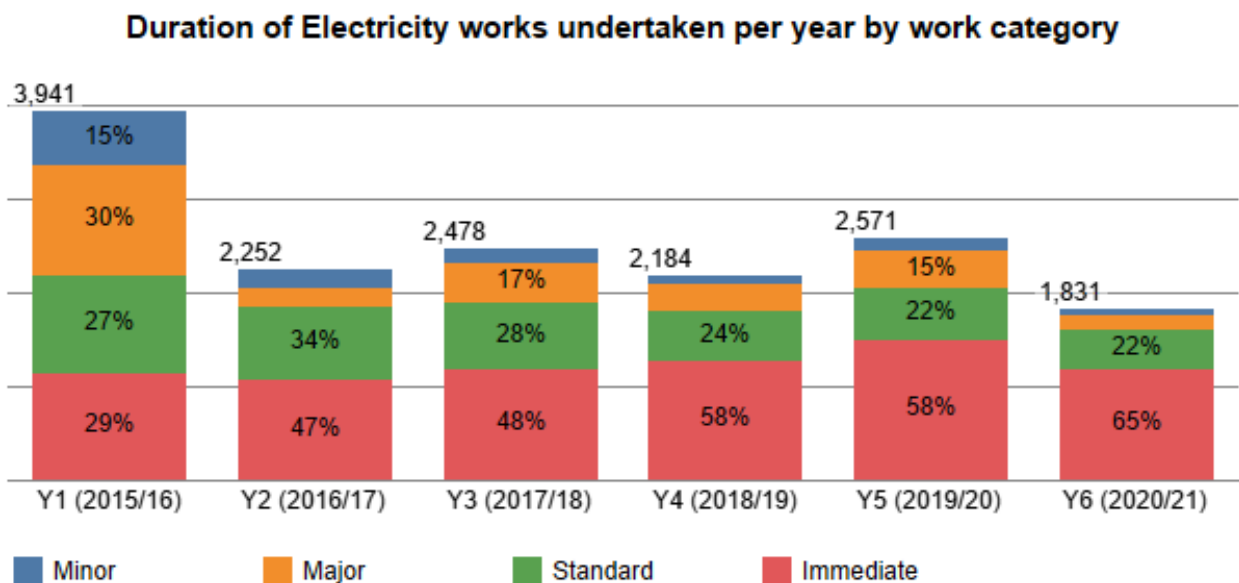
Since July 2021 the introduction of Street Manager caused changes in regulations and information required from Promoters to provide more detailed timing for the work start and work stop. This will enable better analysis of durations for future evaluations.

The chart **Duration of work (days) undertaken per year** show the total duration (calendar days) of work undertaken for each year.

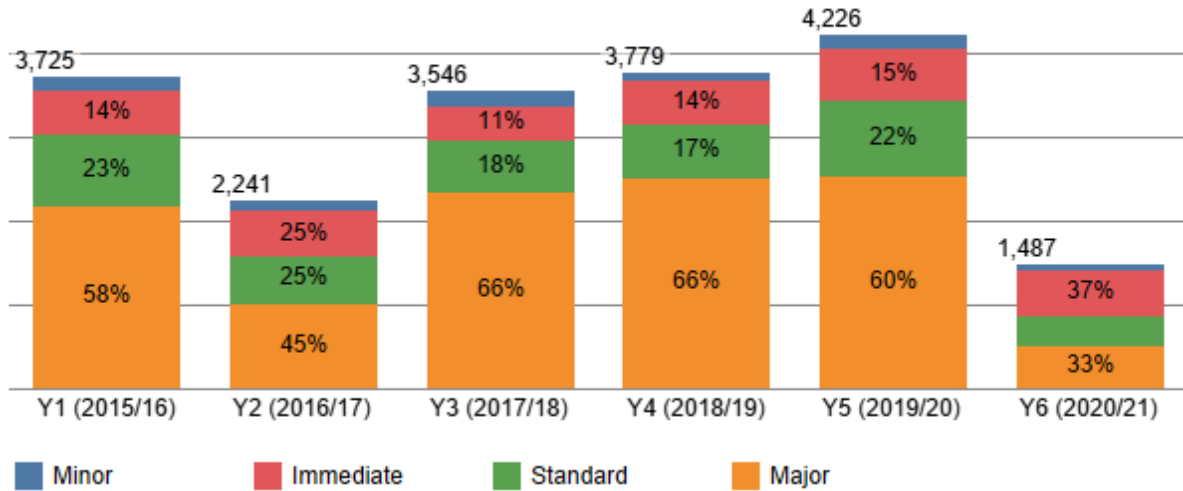


As shown in the analysis below, the total duration of work comprises many different categories between Promoters, requiring different types of coordination and control.

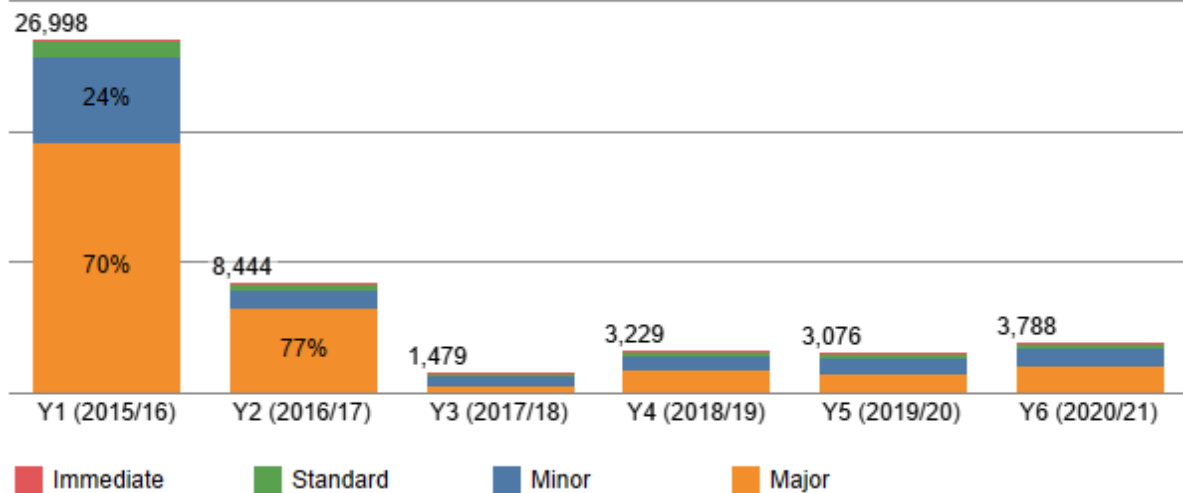
The chart(s) **Duration of [utility] works undertaken per year by work category** show the total duration (calendar days) of work undertaken for each year by the defined utility. Each bar shows the percent of the total duration by work category (legend) sorted from highest (bottom) to lowest (top).



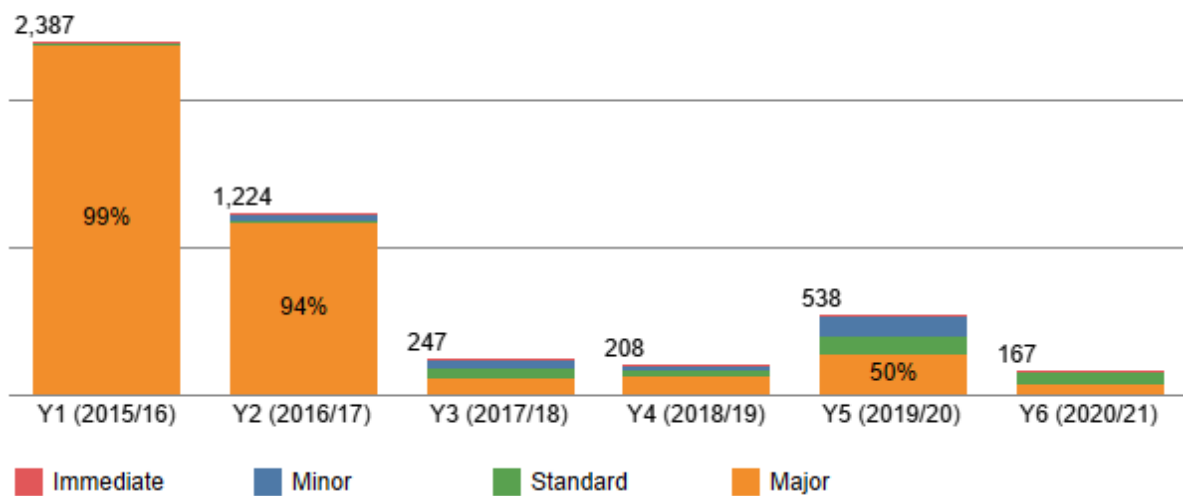
Duration of Gas works undertaken per year by work category



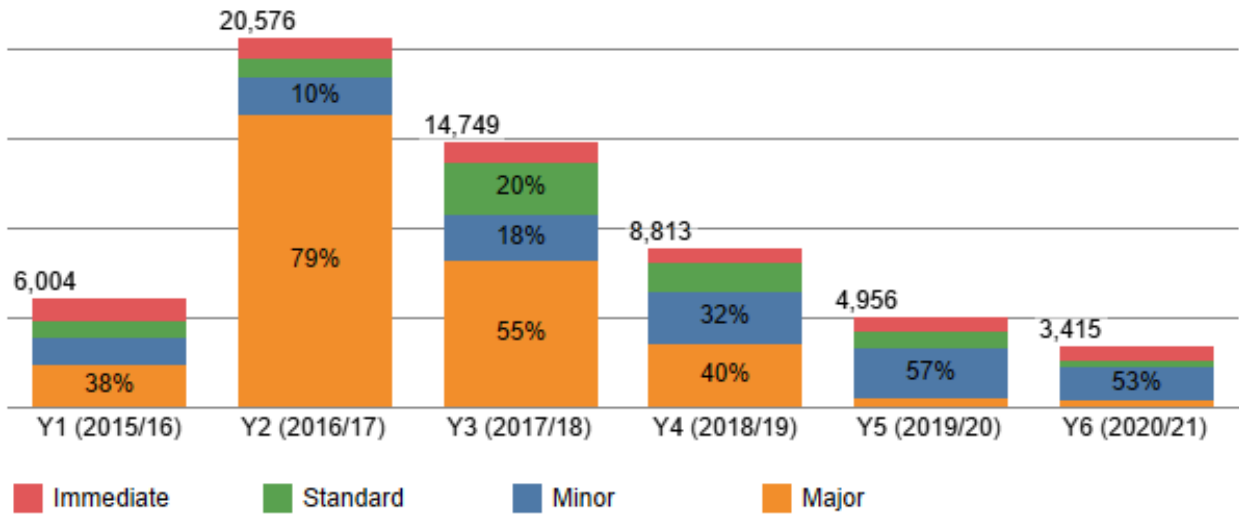
Duration of Highway works undertaken per year by work category



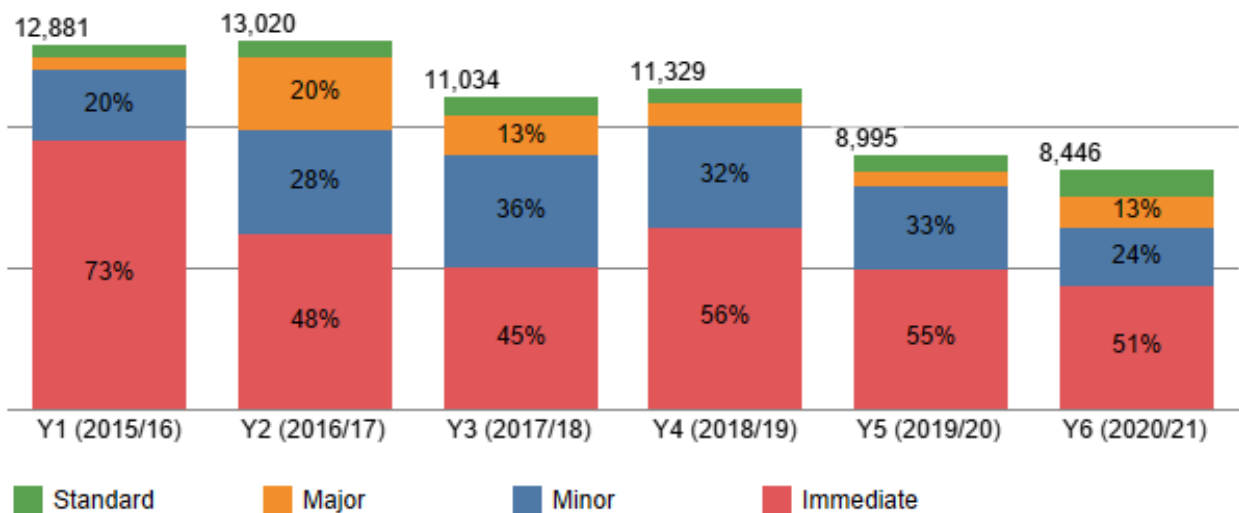
Duration of Other works undertaken per year by work category



Duration of Telecoms works undertaken per year by work category



Duration of Water works undertaken per year by work category



Analysis of duration over time

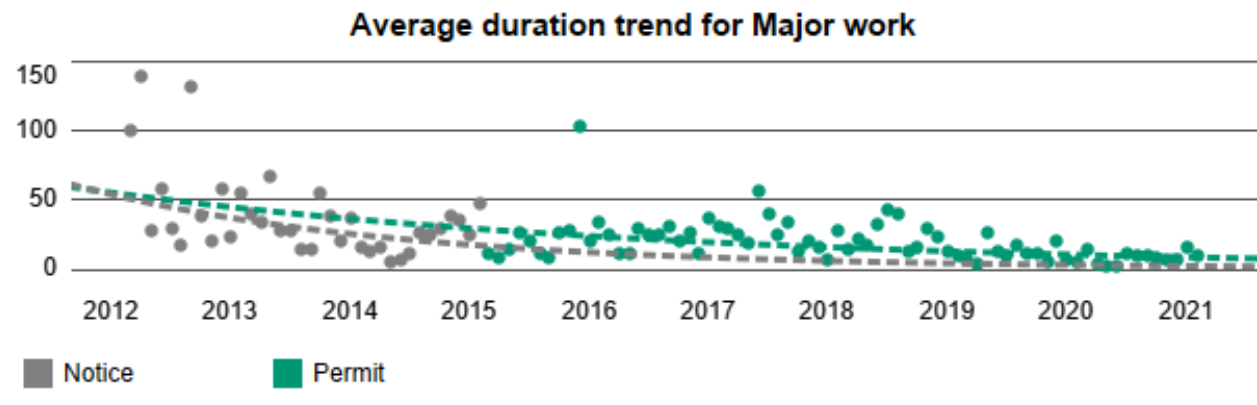
Analysis of duration considers trend over time, with work delineated into their work category', which is typically based on a duration banding, i.e. a minor is work within 2-3 days.

Analysis of durations by works category within the next sections include charts that show **average duration**, per month with a trend line that shows a linear trend model which is computed for each average duration (observation) per month.

Analysis of Major work

Major works are categorised as those requiring a temporary traffic regulation order, such as a road closure, or those with a planned duration of 11 days or more.

The chart **Average duration trend for Major work** shows the total duration of Major works across all years of analysis delineated by works undertaken through a notice or permit (legend).

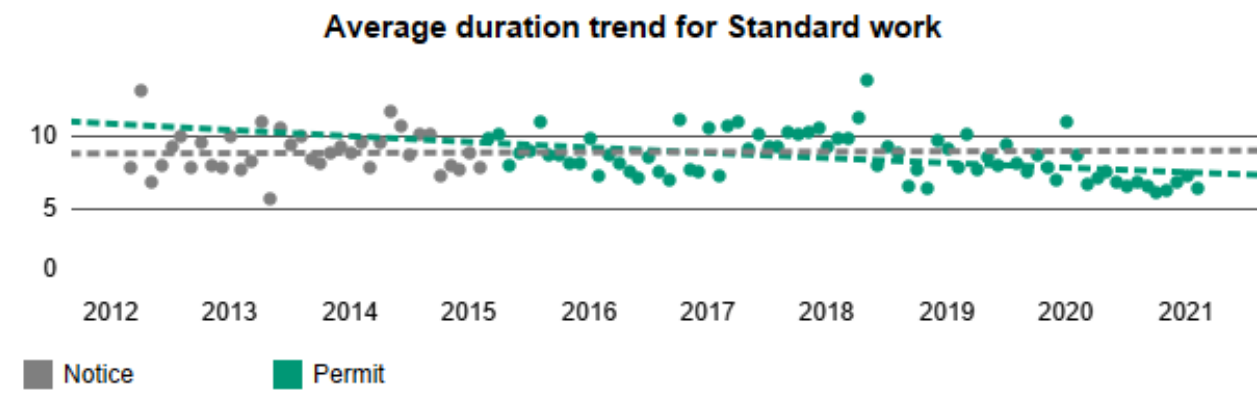


Compared to pre-scheme, the average duration of Major works has decreased and continues to show a trend towards a decline. Considering the high-volume of Major works undertaken in the years before the scheme came into effect and into Year 1 this decrease is to be expected.

Analysis of Standard work

Standard works are those with a planned duration of 4-10 days, which are neither a Major work nor Immediate work.

The chart **Average duration trend for Standard work** shows the total duration of Standard works across all years of analysis delineated by works undertaken through a notice or permit (legend).

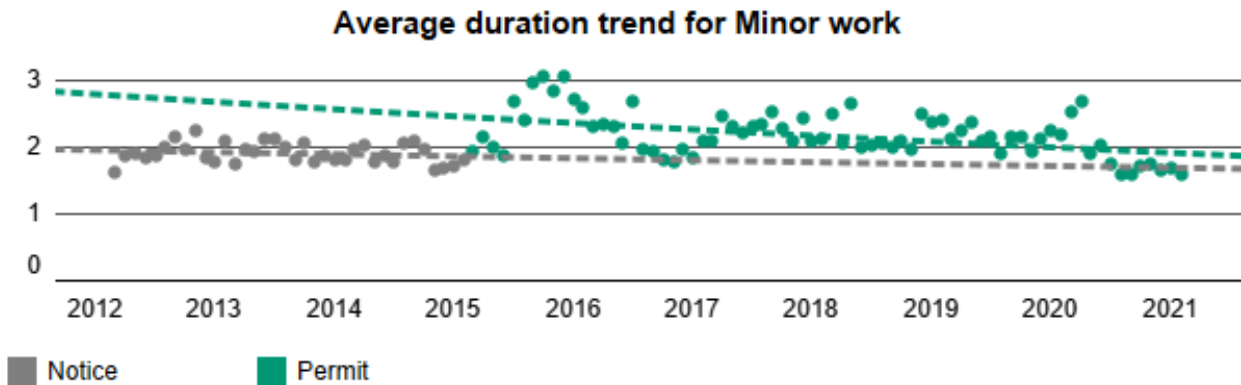


Since the introduction of the permit scheme there has been a trend towards a decrease in average duration for Standard works. In the period 2017 – 2018 the average durations regularly exceeded the 10-day duration; however it is positive to note that since 2019 these have decrease and in more recent years have reached their lowest point.

Analysis of Minor work

Minor works are those with a planned during between 1-3 days and neither a major work nor immediate work. As shown previously in this evaluation, minor works represent the most significant proportion of works undertaken, 58% of all work undertaken, but only 22% of total duration.

The chart **Average duration trend for Minor work** shows the total duration of Minor works across all years of analysis delineated by works undertaken through a notice or permit (legend).

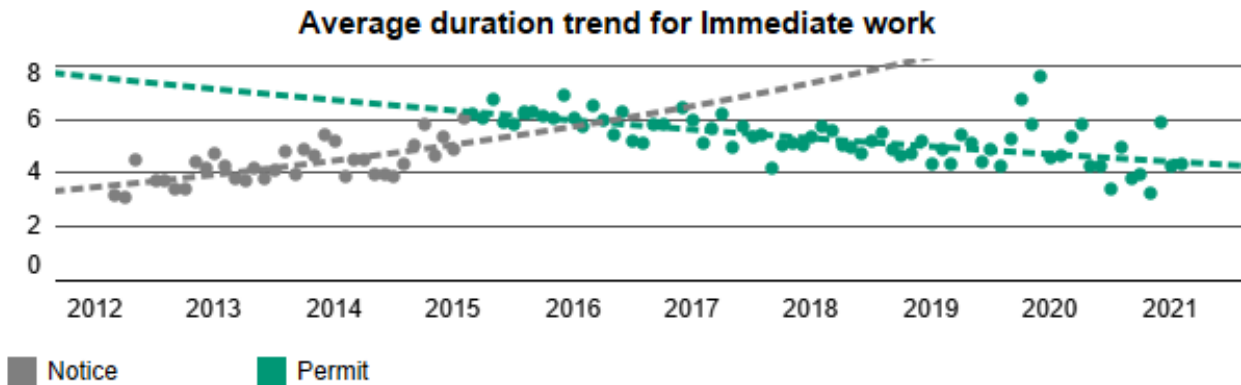


Compared with pre-scheme, the average duration for Minors works has shown an increase, especially in the early years of the scheme. More recently the average durations have decreased back to pre-scheme averages and continue trend towards a decrease. It is positive to note that the average duration for Minor works remains below the duration of 3-days since 2017.

Analysis of Immediate work

Immediate works are either emergency or urgent works that require an immediate start and are therefore unplanned work. Immediate works can often create disproportionate disruption on the road network due to their unplanned nature, especially where traffic management arrangements are not reviewed and pre-agreed beforehand to reduce their impact.

The chart **Average duration trend for Immediate work** shows the total duration of emergency or urgent works across all years of analysis delineated by works undertaken through a notice or permit (legend).



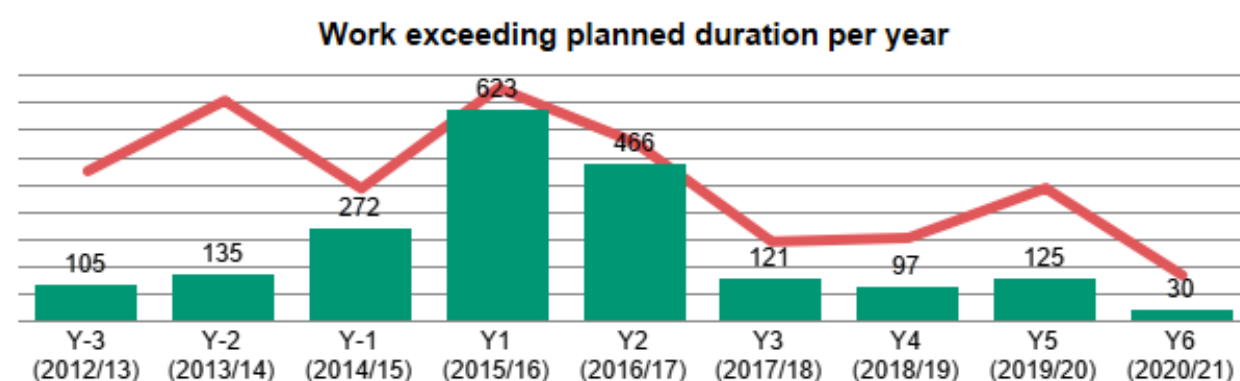
Prior to the introduction of the permit scheme, the average duration for Immediate work was showing a trend towards an increase. Over the six years of the scheme the trend is now showing an overall decrease, although anomalies more recent years are showing a spike in average duration and more variance between the months.

Work exceeding planned duration

Works being undertaken on a very busy and often congested road network that exceed their agreed reasonable period of duration can create significant coordination issues. In turn, these works can apply a 'domino effect' on work programmes and the potential need to reschedule or revoke other active or planned works that may clash with adjacent over running works.

For this evaluation a work exceeding the planned duration is identified when a work's **planned duration** at the start of work is exceeded by the **actual duration** at the end of the work. The duration of the unplanned duration is measured in **calendar days**.

The chart **Work exceeding planned duration per year** shows the total number of work where the actual duration exceeds the planned duration per year (bar) and the total additional days of additional duration (line) per year. **Work with an additional duration in excess of 365 days have been removed from this chart to remove any bias from these anomalies.**



Year	Y-3	Y-2	Y-1	Y1	Y2	Y3	Y4	Y5	Y6
Work exceeding duration	106	137	162	617	471	124	99	128	32
Additional Duration (Days)	553	843	382	862	664	309	309	493	176
Average Additional Duration	5.2	6.2	2.4	1.4	1.4	2.5	3.1	3.9	5.5

At the start of the permit scheme there was an increase in the overall number of works exceeding planned duration, however the average additional duration was lower (1.4 days per work) thereby the overall increase was not as significant compared to the pre-Scheme years.

Since Year 3 the works exceeding planned duration have decreased together with the total duration and continues to decrease into Year 6.

Charges for works overruns

When the Council grant a permit, they are effectively granting a prescribed and reasonable period for the work. Section 74 of NRSWA (S74) allows the Council to **charge for occupation of the highway where works are unreasonably prolonged**. Therefore, should a work exceed this duration and become 'unreasonably prolonged' then the Council may levy a daily charge for each working day of excess.

The S74 charge should be considered as a financial incentive to ensure works are undertaken to the agreed duration, without unnecessary delay.

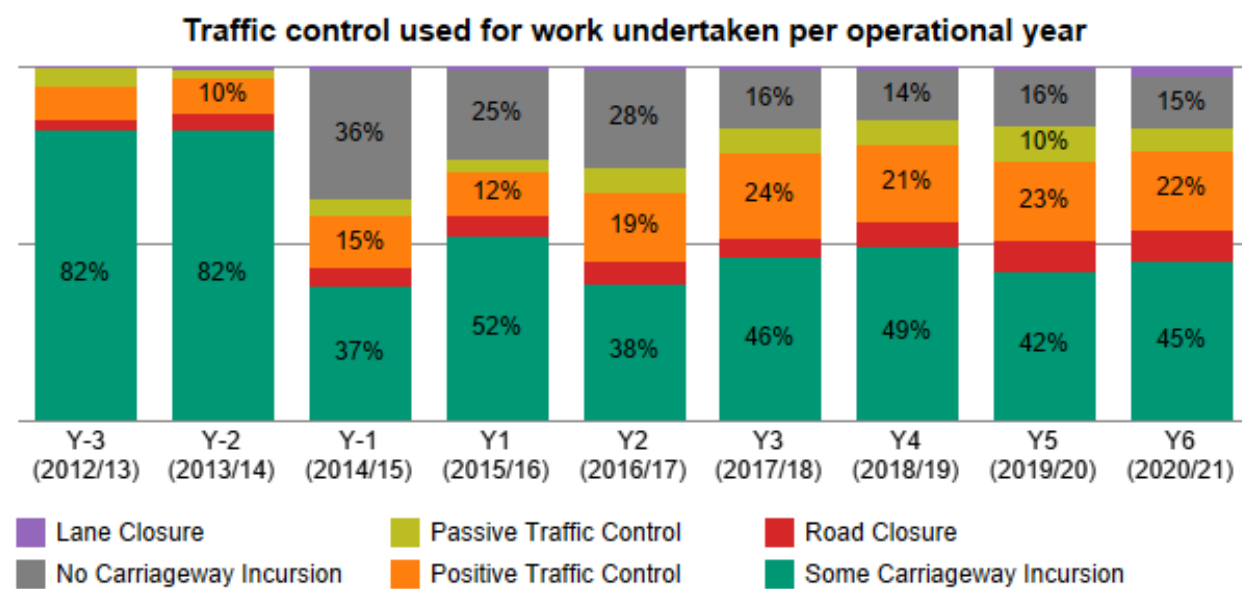
Use of traffic management (control)

All works must be undertaken using an appropriate form of traffic management (control) to ensure work is undertaken safely - for those undertaking the works as well as the road user, *including pedestrians, cyclists and in particular the needs of disabled people and vulnerable groups.*

Different forms of traffic management have varying impacts to the network, *especially the use of portable traffic signals, lane closures and road closures*, so the need to undertake works safely whilst also controlling the impact of works needs to be balanced carefully.

The **Code of Practice: Safety at Street Works and Road Works** sets out the proper arrangements for the signing, lighting and guarding of works – this must be followed by all Promoters undertaking works on the highway.

The chart **Traffic control used for work undertaken per operational year** shows traffic management deployed (legend) for all works undertaken within each year.



There is a noticeable change from some carriageway incursion to other forms of traffic management since the introduction of the permit scheme, which would reflect much greater scrutiny in the traffic management being proposed by Promoters. The increase of no carriageway incursion and some carriageway incursion could also be attributed to changes made to system technical specifications used within the industry around this time.

Since Year 3 the proportion of traffic control has remained similar, which could indicate that the changes made by the Council, through the use of the permit scheme, have been embedded with Promoters. As such, it could be assumed that the overall use of traffic control has improved.

Reinstatement

Following any works involving breaking up the highway, Promoters have a responsibility to reinstate the roads to certain standards to ensure they do not shorten the life expectancy of the highway asset or create uneven running surfaces. In some instances, a Promoter may choose to complete an interim reinstatement, which still needs to meet a required standard and must be made permanent within six months.

The table **Work phase reinstatement per year** shows the reinstatement type, either interim or permanent (legend), for work undertaken (when required) for each phase of work.

Work phase reinstatement per year

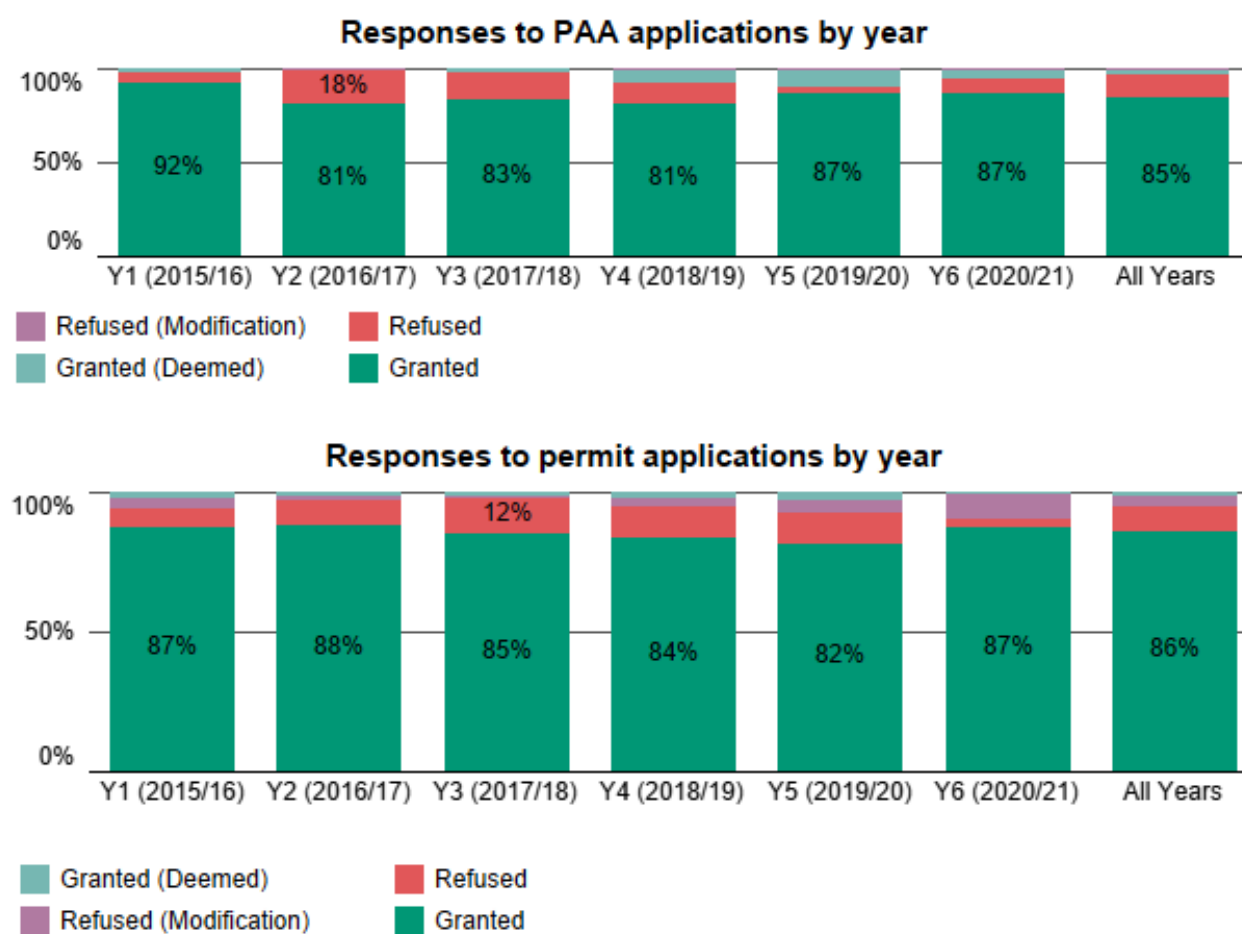
Reinstatement Type	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Interim	20	24	23	30	25	84
Permanent	4,337	4,669	4,900	4,713	3,890	3,919
Total	4,357	4,693	4,923	4,743	3,915	4,003
% Interim Reinstatement	0.5%	0.5%	0.5%	0.6%	0.6%	2.1%

Analysis of Work Coordination

Responses to permit applications

For a permit scheme to be effective the Council must process and respond to each application. Where the Council accept an application, this is granted. Where the Council do not accept an application, or want to make changes to the proposed work, it is refused, and a response code (based on a set of national codes) **must** be provided.

The charts **Responses to PAA and permit applications by year** shows the responses (legend) to PAA or permit applications by the Council, as a proportion of the total received per year. Applications that were cancelled or superseded before a response could be issued have been removed from this analysis.



Across the permit scheme years c.85% of PAA and permit applications were granted on first application and has remained broadly at the level across the period since year 2. The higher percent of applications being granted in years 1 and 2 demonstrates the transition from a notice to a permit regime and embedding new ways of working.

Further analysis shows the volume of permits becoming deemed (granted) has been c.2% year on year which is an acceptable level.

The chart **Response codes applied for rejected applications in years four to six** shows the total number of response codes applied on rejected applications for years 4 to 6.

Response codes applied for rejected applications in years four to six

	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
RC10 Missing information	24	7	9
RC11 Missing conditions	97	42	8
RC12 Traffic Management Details	99	200	53
RC20 Incorrect details	2	11	5
RC21 Incorrect recipient	1	1	0
RC22 Location issues	17	100	39
RC23 Conflicting information	14	17	5
RC30 Coordination issues	9	11	2
RC31 Clash of works	109	491	187
RC32 Timing of works	25	34	8
RC33 Collaboration opportunity	0	0	0
RC40 Lack of traffic management approval	11	8	4
RC41 Incorrect traffic management	46	50	2
RC42 Early start agreement	1	9	1
RC43 NRSWA Section 58 agreement	19	37	11
RC44 Excessive duration	10	6	3
RC50 Other reason	84	80	88

Analysis of response codes issued for rejected applications in years 4 to 6 shows the main reasons for rejections are:

- Clashes with other planned or active work;
- Incorrect proposed traffic management or a lack of detail in these arrangements; or
- Missing or incorrect conditions. This seems to have improved as the use of this reason decreased in year 6.

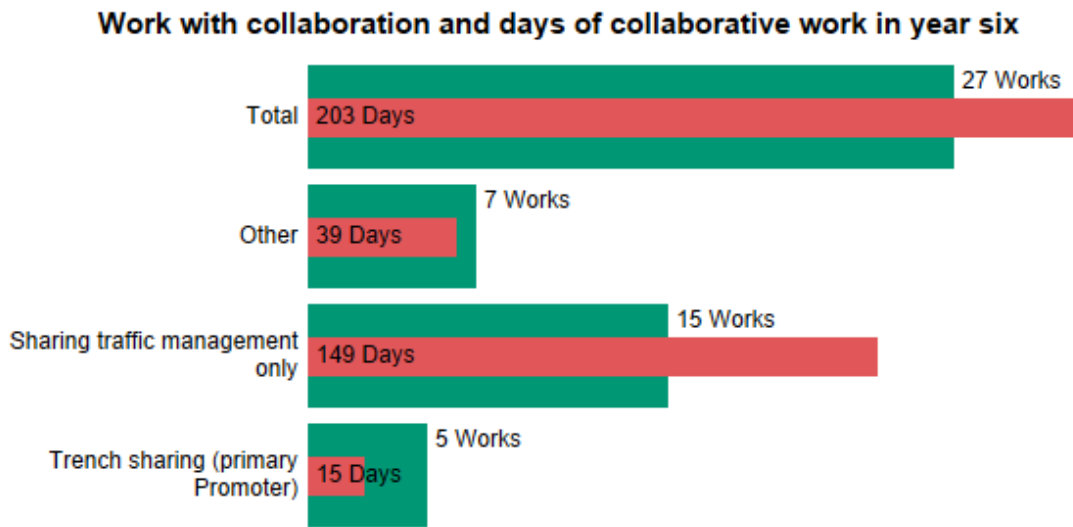
Collaborative works

One of the most effective methods for the Council to reduce the potential disruption from works is for Promoter to collaborate their work, thereby undertaking work on the same section of the highway at the same time or under the same form of traffic management.

As shown in the analysis (below) in Year 6 there were only 27 works under a form of collaboration, which amounted to 203 days of collaborative work. This demonstrates the difficulty faced by the Council to achieve collaboration between Promoters.

Further analysis of reasons for rejection (above) shows no works were rejected for 'collaboration opportunity'. The Council should consider using this reason for rejection where relevant to provide additional analysis for potential collaboration opportunities not undertaken.

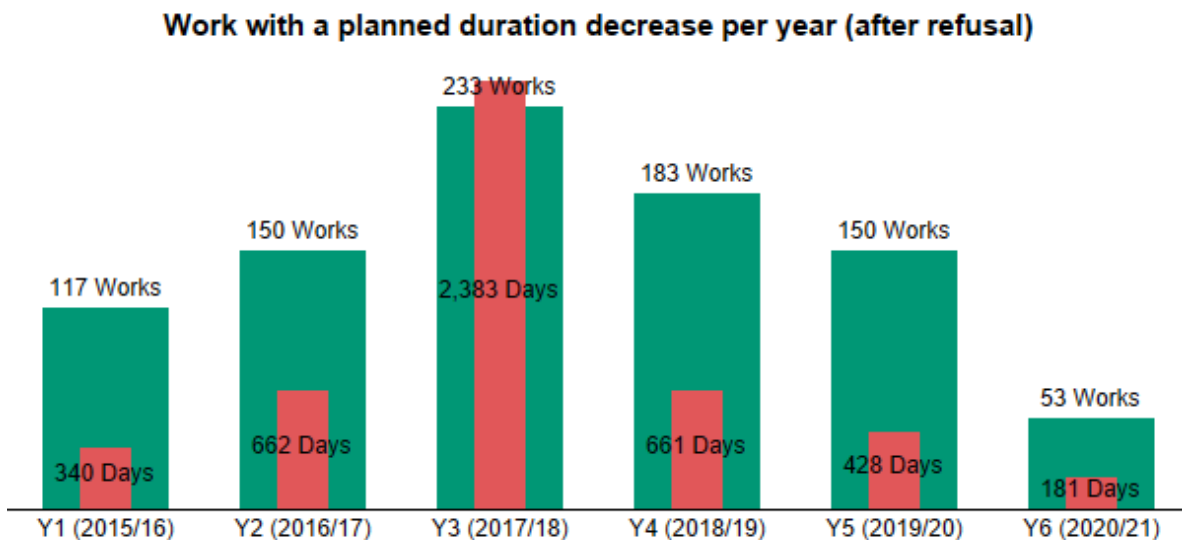
The chart **Work with collaboration and days of collaborative work in year six** shows the total number of works undertaken with a form of collaboration, by type, and the total duration of those works.



Changes applied during the application stage

The processing of applications provides an opportunity for the Council to undertake their network management duty, with an aim to reduce the potential disruption of the work. Analysing changes to the work from the initial application through to work start can therefore provide a demonstrable benefit of the permit scheme.

The chart **Work with a planned duration decrease per year (after refusal)** shows the total works and total (adjusted) calendar days where the duration in the initial application and the duration at work start decreases after a rejected application.



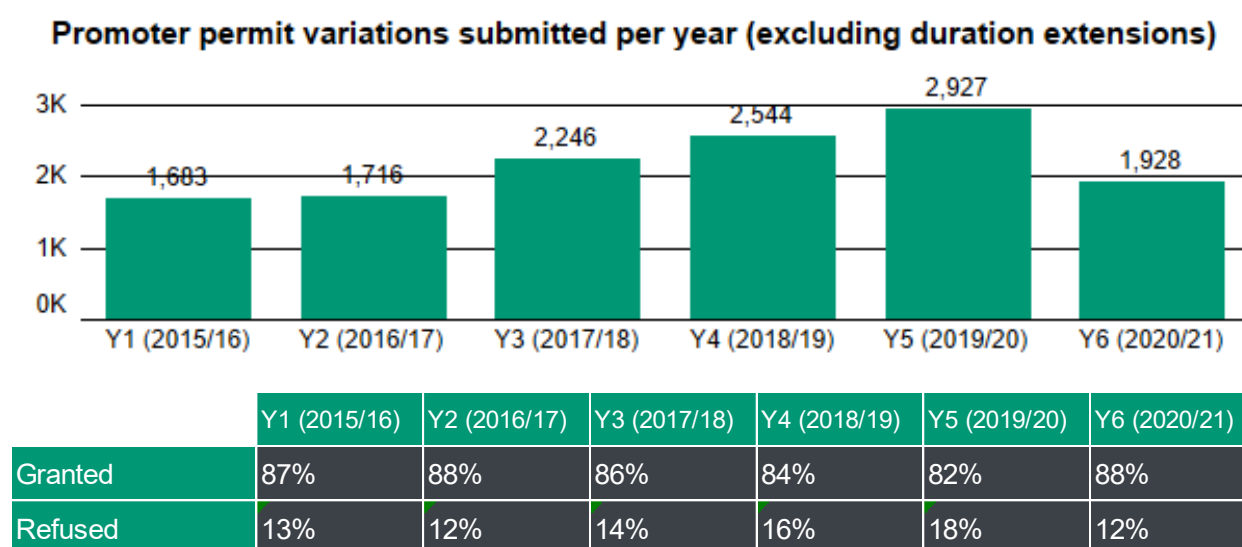
It is positive to note that year on year there are large numbers of works that decrease in their planned duration. Although this cannot be directly related to the permit scheme, it can be assumed that the Council’s intervention during the application stage (rejecting the permit) could have influenced this change.

The decreasing volume of changes from Year 3 and the low volume of changes in Year 6 could indicate that the permit application process has been effective at driving through systemic changes to both the planned duration and traffic management on applications without the need for a Council intervention.

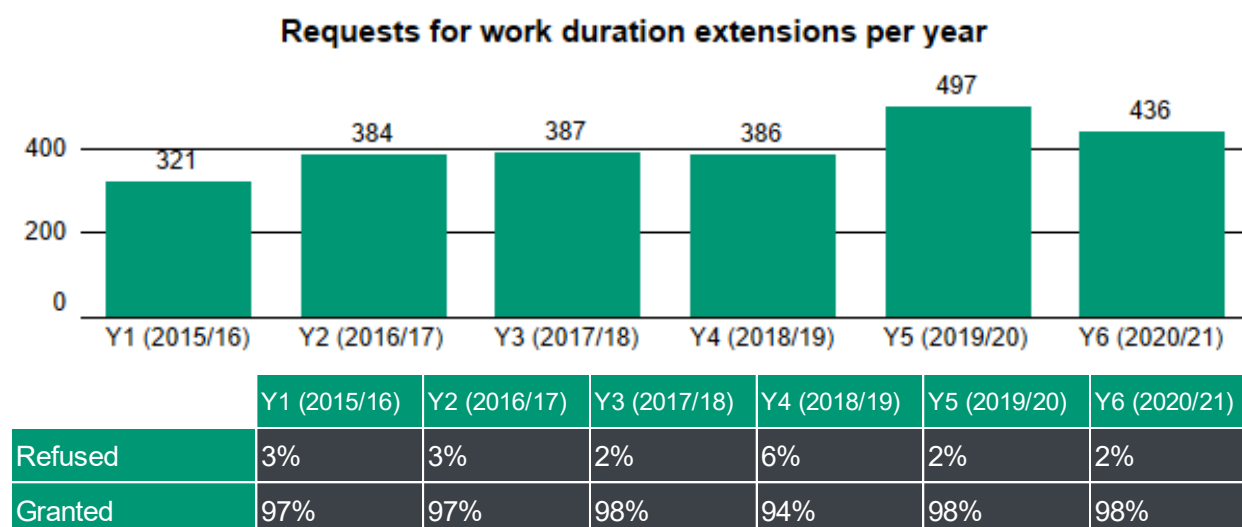
Permit variation (change requests and alterations)

A permit's content must reflect the proposed or current works and must be varied when changes are proposed to the work or made whilst the work is in progress. Therefore, a permit variation (also referred to as a change request or alteration in Street Manager), is often required. Variations can also be issued by the Council as an imposed change.

The chart and table **Promoter permit variations submitted per year (excluding duration extensions)** shows the number of alterations submitted per year and the response to these by the Council (excluding applications that are cancelled or superseded) as a % of total.



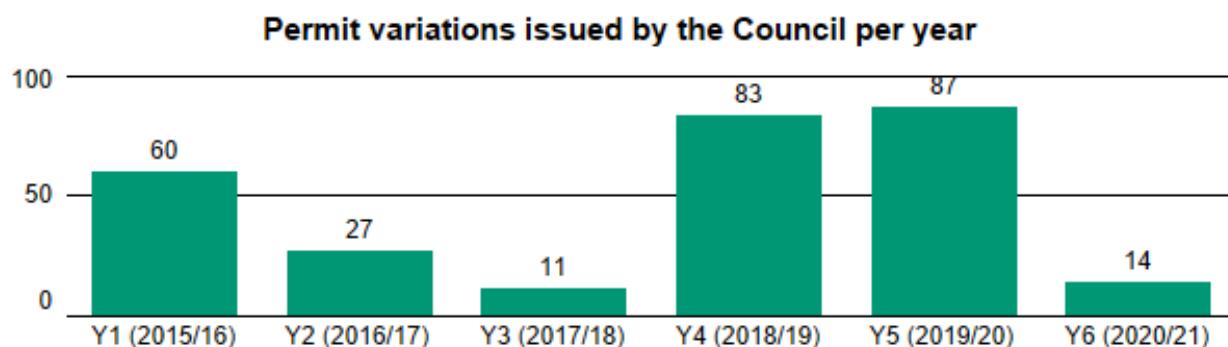
The chart and table **Requests for work duration extensions per year** shows the requests to extend the work duration (by a Promoter) and the response to these requests by the Council per year.



Year on year, the volume of duration extensions has increased with an average of 6% of work undertaken requesting an extension. In Years 8 and 9 this has increased to 8% of total works. On average 97% of duration extensions are granted by the Council.

The reason for this increase and whether the volume of extension is related to issues of poor planning or work delivery, or reflects genuine reasons for on-site delay, is to be investigated by the Council.

The chart and table **Permit variations issued by the Council per year** shows the number of variations issued by the Council to Promoters by year. The table shows the percent of total variations by work category for each year.



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Major	8%	19%		6%	11%	14%
Standard	10%	4%	9%	4%	2%	
Minor	28%	11%	55%	4%	6%	7%
Immediate	53%	67%	36%	87%	80%	79%

Since Year 4 there has been an increase in variations issued by the Council, predominantly for Immediate works. This reflects national guidance requesting changes to urgent or emergency work already in progress through a variation instead of rejecting a permit to avoid a situation whereby a Promoter was working without a permit and liable for an offence.

Analysis of Permit Conditions

Use of permit conditions

Applying a condition to a permit is one of the primary methods for achieving the objectives of a permit scheme. The process of a Promoter applying for a permit allows the Council to make changes to the work and where necessary apply conditions, within pre-define categories, to control and minimise the impact of the works, sometimes even before work starts, *for example advanced publicity of a road closure*.

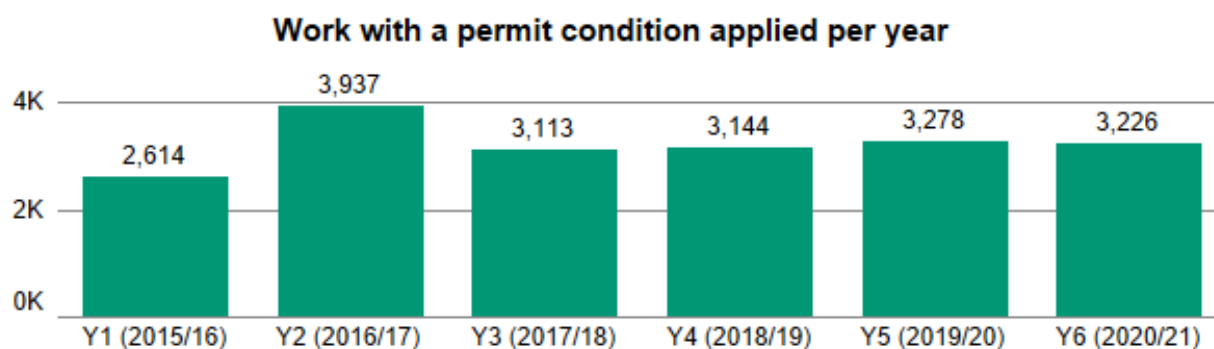
The sub-sections below outline the conditions available to the Council. These are based on the categories defined in the Statutory Guidance for Permit Conditions. This Guidance sets out the conditions that can be applied to permits and the potential parameters that can be associated to these conditions.

Analysis and evaluation for the use of conditions can be difficult to undertake as there are many variables for a work that need to be taken into consideration, *such as the work methodology, location, use of materials or plant, timing of the work*.

It can be impracticable to determine the criteria for a work and whether a condition could, or should, have been applied or not. In addition, it is not always possible to determine the effect of the condition or an outcome that can be quantified. **This analysis does not include those conditions that apply to all permits – only those that can be applied to a permit.**

Analysis shows across the six years of the scheme 50% of works undertaken included a condition.

The chart and table **Work with condition applied per year (with % of total work)** shows all work undertaken with a permit condition (chart) and those with a condition applied and a percentage of total work with a condition (table).



Work with condition applied per year (with % of total work)

	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition applied	2,614	3,937	3,113	3,144	3,278	3,226
Total works	8,225	6,648	5,945	6,203	5,927	5,360
% of Total	32%	59%	52%	51%	55%	60%

The chart **Conditions included, added or removed from work undertaken in year six** shows for work undertaken whether a condition was included on the initial application (by the Promoter) added or removed during the application stage for each permit condition type. Work without the relevant condition are excluded from analysis.

Conditions included, added or removed from work undertaken in year six



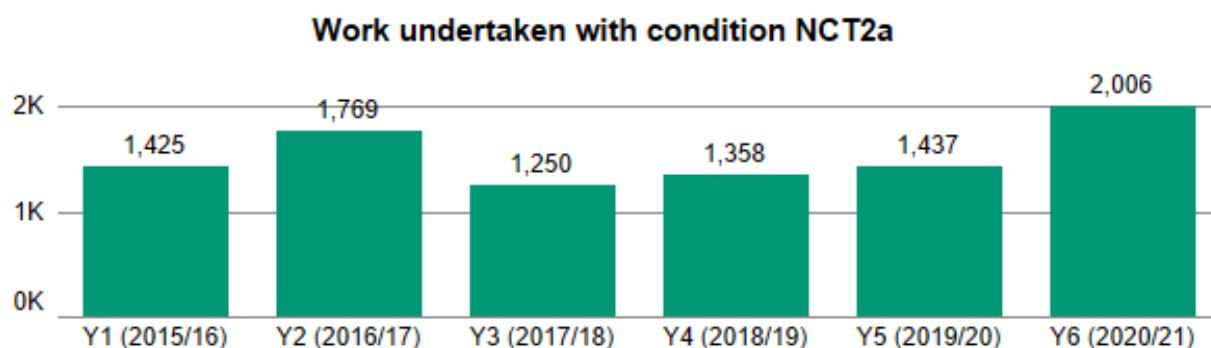
Conditions for Date & Time Constraints

There are two date constraint conditions applied to permits, NCT1a and NCT1b. These conditions limit the flexibility of when works can be started within a timeframe which varies depending on the road category. These conditions are implied and do not need to be attached to a permit, therefore no evaluation on the use of this conditions has been carried out.

There are two further time constraint conditions which can be applied to permits:

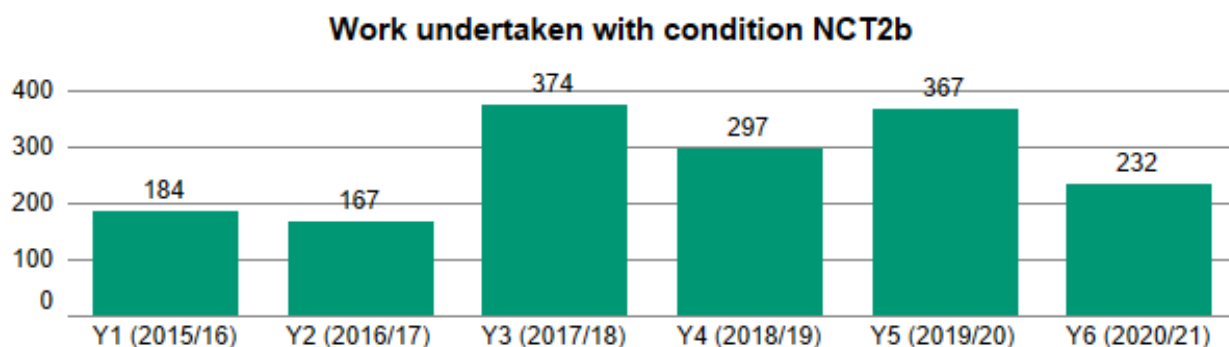
- NCT2a –to limit the days and times of day; and
- NCT2b – to specify extended working hours.

The chart **Work undertaken with condition NCT2a** shows work undertaken with condition 'NCT2a to limit the days and times of day' applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	1%
Condition added	1%	1%	1%	2%	3%	6%
Condition on application	17%	26%	20%	20%	21%	29%
Condition not applied	83%	73%	78%	78%	75%	64%

The chart **Work undertaken with condition NCT2b** shows the number of works undertaken with condition 'NCT2b to specify extended working hours' applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.



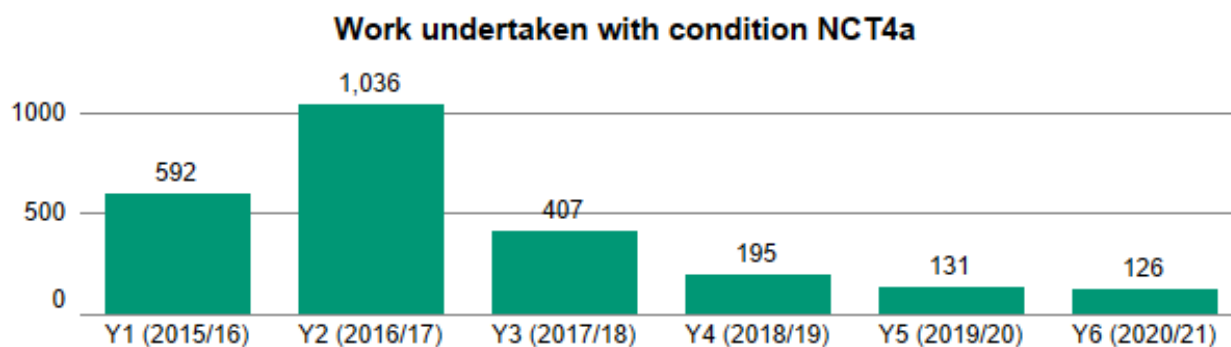
	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	0%	0%	1%	1%	0%	1%
Condition on application	2%	2%	6%	4%	6%	3%
Condition not applied	98%	97%	94%	95%	94%	96%

Conditions for Material and Plant Storage

There are two conditions for the removal and storage of materials and/or plant during works:

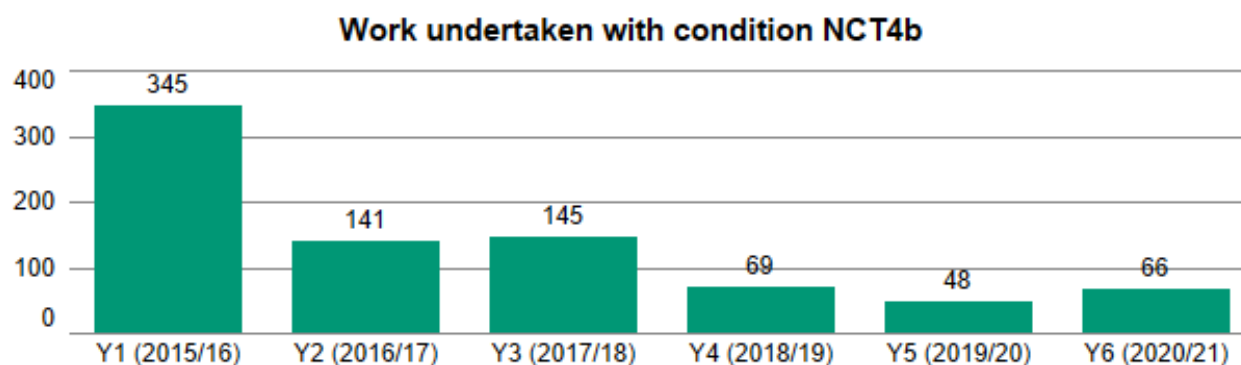
- NCT4a -removal of surplus materials and/or plant; and
- NCT4b – the storage of surplus materials and/or plant.

The chart **Work undertaken with condition NCT4a** shows the number of works undertaken with condition 'NCT4a for removal of surplus materials and/or plant' applied (chart) the whether the condition was removed, added, included in the application, or not applied for as a percentage of the total (table) per year.



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	0%	1%	0%	0%	0%	0%
Condition on application	7%	15%	7%	3%	2%	2%
Condition not applied	93%	84%	93%	97%	98%	98%

The chart **Work undertaken with condition NCT4b** shows the number of works undertaken with condition 'NCT4b for storage of surplus materials and/or plant' applied (chart) the whether the condition was removed, added, included in the application, or not applied for as a percentage of the total (table) per year.



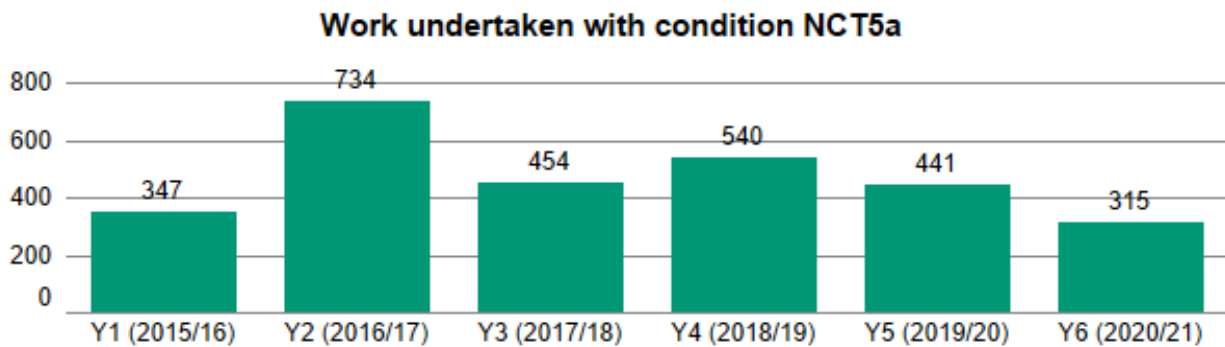
	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	4%	2%	2%	1%	1%	1%
Condition on application	0%	0%	0%	0%	0%	1%
Condition not applied	96%	98%	97%	99%	99%	99%

Conditions for Road Occupation

There are three conditions related to road occupation and traffic space dimension conditions, including a road closure:

- NCT5a – specifying the width and/or length of road space that can be occupied; and
- NCT6a – specifying the road space to be available to traffic (including pedestrians) at certain times of the day; and
- NCT7a – limiting activities when the specified road is closed to traffic.

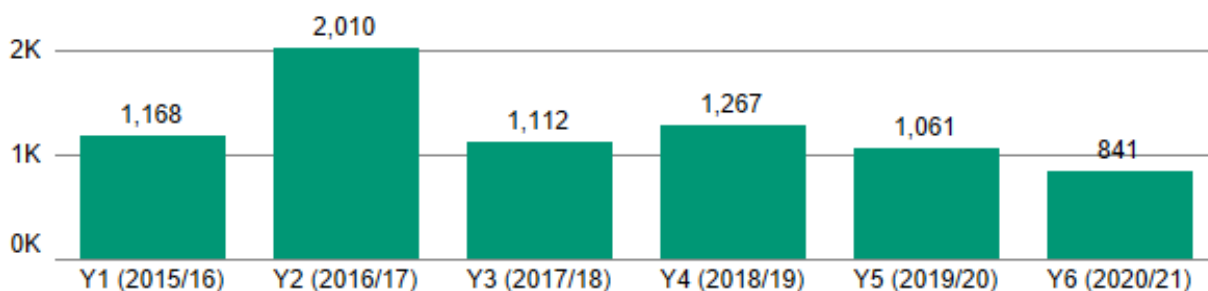
The chart **Work undertaken with condition NCT5a** shows work undertaken with condition ‘NCT5a specifying the width/length of road space that can be occupied’ applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	0%	0%	0%	0%	0%	1%
Condition on application	4%	11%	7%	9%	7%	5%
Condition not applied	96%	89%	92%	91%	93%	94%

The chart **Work undertaken with condition NCT6a** shows work undertaken with condition ‘NCT6a specifying the road space to be available’ applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.

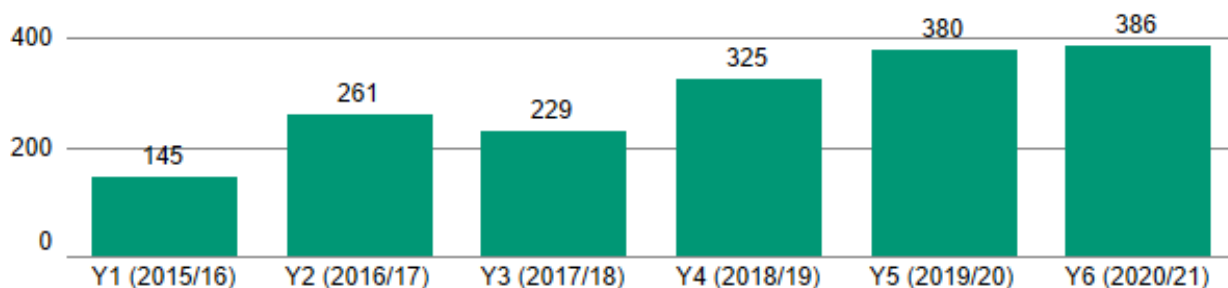
Work undertaken with condition NCT6a



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	1%	1%	1%	1%	0%	2%
Condition on application	14%	29%	18%	20%	17%	14%
Condition not applied	86%	69%	81%	79%	82%	84%

The chart **Work undertaken with condition NCT7a** shows work undertaken with condition 'NCT7a limiting activities under a road closure' applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.

Work undertaken with condition NCT7a



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	2%	4%	2%	6%	4%	2%
Condition added	0%	0%	1%	1%	0%	7%
Condition on application	70%	40%	28%	27%	24%	17%
Condition not applied	28%	55%	69%	65%	72%	75%

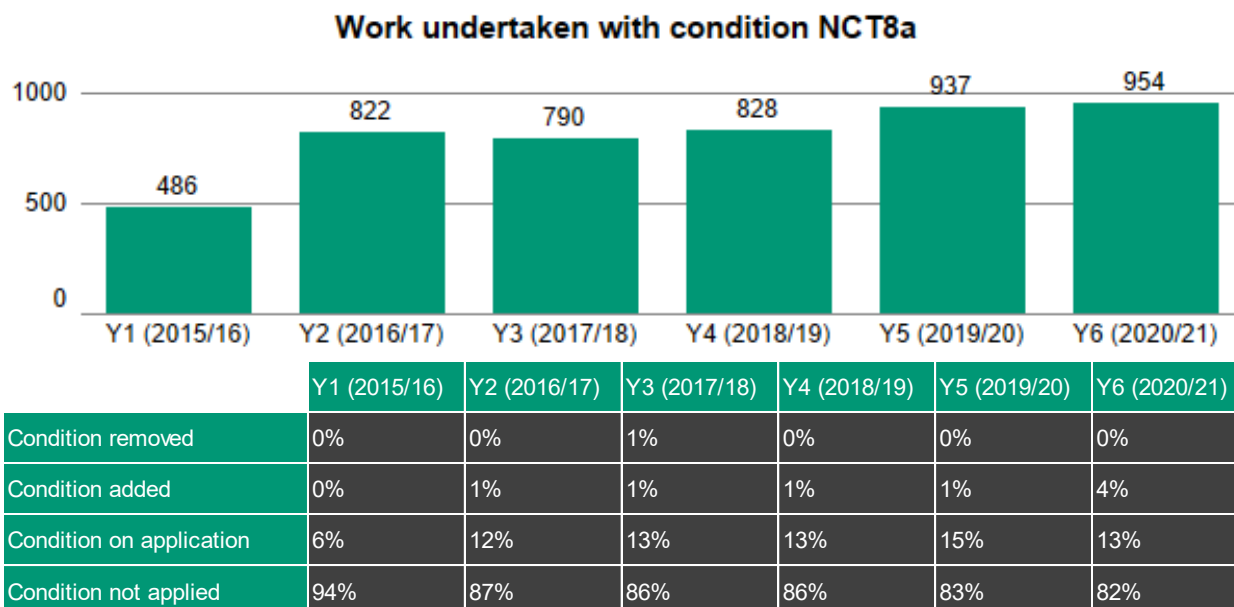
Conditions for Light Signals and Shuttle Working

There are two conditions related to works using specific forms of traffic control:

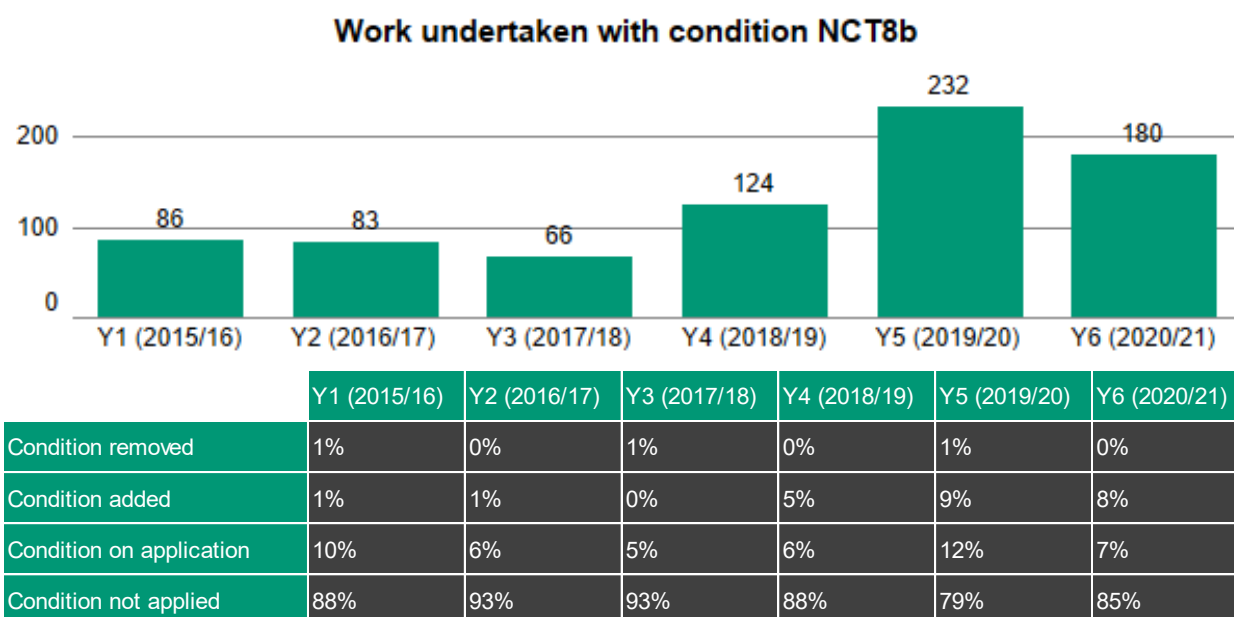
- NCT8a – limiting activities to the deployment of specified temporary traffic control; and
- NCT8b – specifying the manual control of traffic management at specified times.

Analysis of the application of this condition is limited to works that have a relevant traffic management category, *i.e. two-way lights*.

The chart **Work undertaken with condition NCT8a** shows work undertaken using temporary traffic control with condition 'NCT8a for deployment of specified traffic control' applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.



The chart **Work undertaken with condition NCT8b** shows work undertaken with a relevant form of traffic control with condition 'NCT8b for manual control of traffic management' applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.

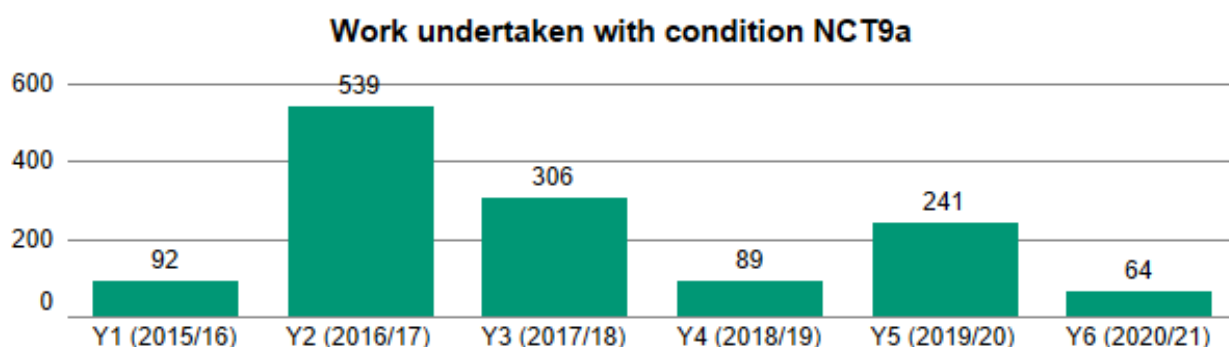


Conditions for Traffic Management Changes

There are three conditions related to traffic management changes during works:

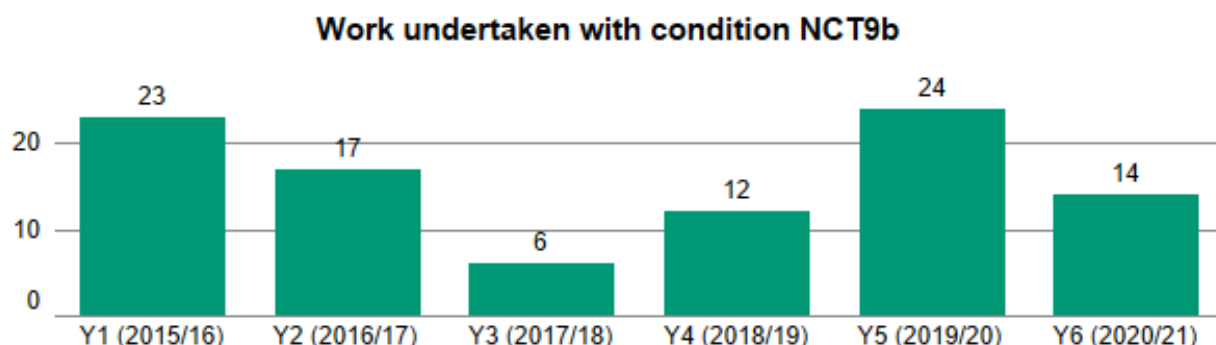
- NCT9a – notifying the Authority when traffic management changes during works;
- NCT9b – specifying the traffic management arrangements to be in place before activities can commence; and
- NCT9c – removing portable traffic signals from operation when no longer in use.

The chart **Work undertaken with condition NCT9a** shows work undertaken with condition 'NCT9a to notify when traffic management changes' applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	0%	0%	0%	0%	0%	0%
Condition on application	1%	8%	5%	1%	4%	1%
Condition not applied	99%	92%	94%	98%	96%	99%

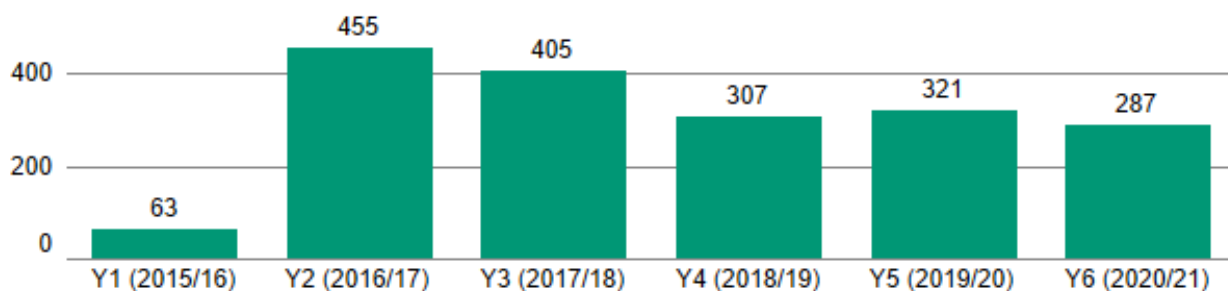
The chart **Work undertaken with condition NCT9b** shows work undertaken with condition 'NCT9b specifying the traffic management arrangements to be in place before activities can commence' applied (chart) the whether the condition was removed, added, included in the application or not applied for as a percentage of the total (table) per year.



	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	0%	0%	0%	0%	0%	0%
Condition on application	0%	0%	0%	0%	0%	0%
Condition not applied	100%	100%	100%	100%	100%	100%

The chart **Work undertaken with condition NCT9c** shows work undertaken using portable traffic signals only with condition 'NCT9c removing portable traffic signals after use' applied (chart) the whether the condition was removed, added, included in the application, or not applied for as a percentage of the total (table) per year.

Work undertaken with condition NCT9c



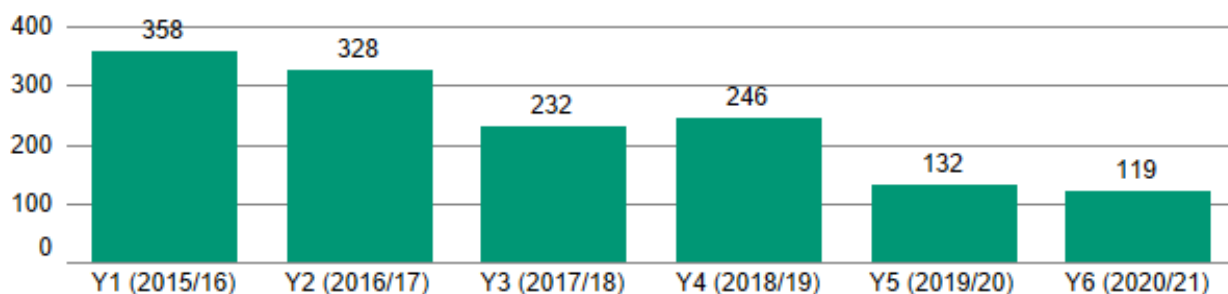
	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	1%	1%	1%	1%	1%	1%
Condition added	1%	1%	1%	3%	4%	6%
Condition on application	8%	38%	34%	26%	25%	17%
Condition not applied	91%	60%	63%	70%	70%	75%

Conditions for Work Methodology

There is one condition related to work methodology: NCT10a – specifying the work methodology to be used for the proposed activities.

The chart Work undertaken with condition NCT10a shows work undertaken with condition 'NCT10a for work methodology' applied (chart) the whether the condition was removed, added, included in the application, or not applied for as a percentage of the total (table) per year.

Work undertaken with condition NCT10a

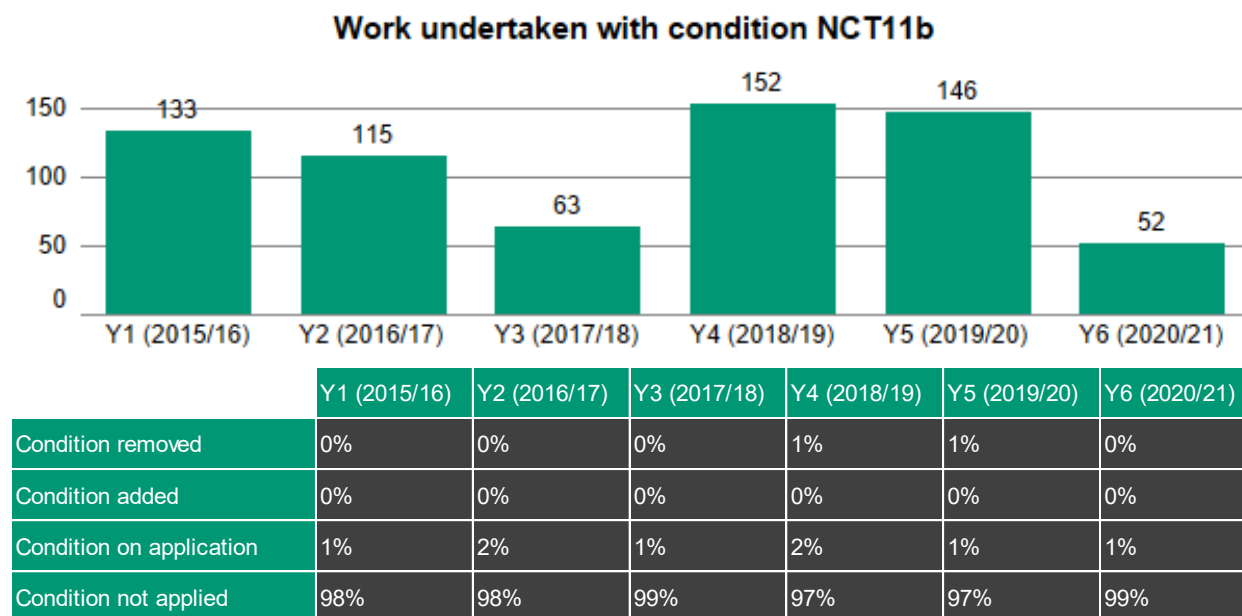


	Y1 (2015/16)	Y2 (2016/17)	Y3 (2017/18)	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Condition removed	0%	0%	0%	0%	0%	0%
Condition added	0%	0%	0%	0%	0%	0%
Condition on application	4%	5%	4%	4%	2%	2%
Condition not applied	95%	95%	96%	96%	98%	98%

Conditions for Consultation and Publicity

Displaying a permit number on a site information board during the entire duration of the works is a condition that is **implied** on all permits (NCT11a). There is an additional condition (NCT11b) specifying the advanced publicity of works that can be applied to work.

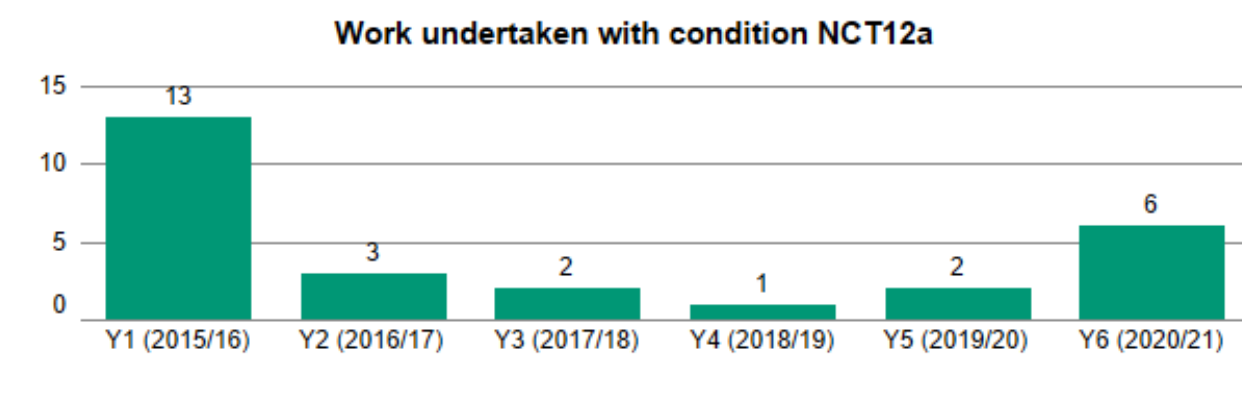
The chart *Work undertaken with condition NCT11b* shows work undertaken with condition 'NCT11b for advanced publicity of works' applied (chart) the whether the condition was removed, added, included in the application, or not applied for as a percentage of the total (table) per year.



Conditions for the Environment (Noise)

There is a condition that can be applied to works for an environmental (noise) control: NCT12a – limiting the timing of certain activities for the environment.

The chart *Work undertaken with condition NCT12a* shows work undertaken with condition 'NCT12a limiting the timing of certain activities for the environment' applied (chart) the whether the condition was removed, added, included in the application, or not applied for as a percentage of the total (table) per year.



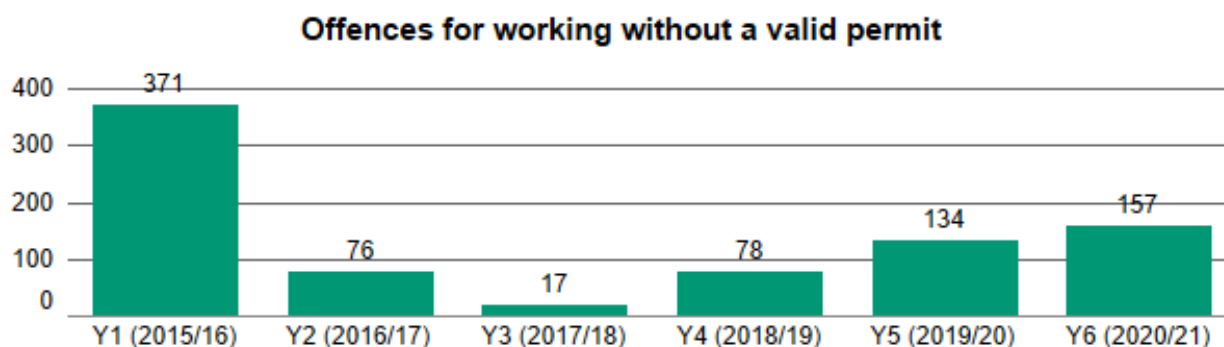
Local Conditions

The Statutory Guidance for Permit Conditions allows for a non-defined condition to be agreed between the Council and a works promoter – this is called a local condition. No local conditions have been applied by the Council.

Analysis of Permit Compliance

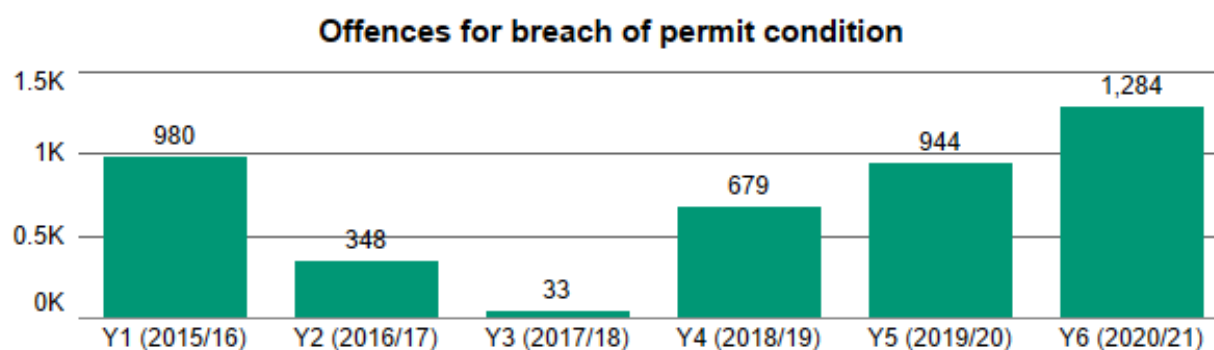
Under a permit scheme the Council can undertake additional inspections during work for permit compliance to ensure that (a) work is being undertaken with a valid permit and (b) in accordance with the stated conditions (as applicable). A permit scheme introduced two new offences, with financial penalties for statutory undertakers, where there is a failure to comply with either of these.

The chart **Offences for working without a valid permit by utility** shows the number of offences issued by the Council for working without a permit per year.



As expected, the number of offences for working without a valid permit were the highest at the start of the scheme in Year 1. In more recent years the number of offences has increased, which could indicate results from more inspections by the Council instead of an increase in the number of works without a permit. This demonstrates that even after six years of permit scheme operation, checks are still required to ensure Promoters are working with a valid permit.

The chart **Offences for breach of permit condition** shows the number of offences issued by the Council for a breach of permit condition per year.



The Council experienced a high turnover of staff in years three through five, including Inspectors and as such the volume of offences has seen a decrease. This should therefore not be attributed to a reduction in non-compliance, but a reduction in the works being inspected.

Analysis of Cost and Benefit

Cost for operating the scheme

The Permit Scheme Regulations allows the Council to charge a fee to recover the prescribed costs for the administration of a permit, a provisional advanced authorisation and the variation (alteration) of a permit. These fees are applied to statutory undertaker works only, not for work for road purposes (highway authority work).

The Council identifies costs to operate the permit scheme by delineating the staff and associated overheads that are directly responsible for processing statutory undertaker works, and their time spent on these tasks, over and above the resource required to run the previous noticing regime.

The table below **Recoverable cost reconciliation Years 4 to 6** shows the actual recoverable cost, permit fee income and the income balance (cost – income) per year (4 to 6).

Permit Scheme Year	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Total Operating Cost	351,674	169,151	243,604
Permit Fee Income	173,958	171,441	131,574
Income Balance	-49,898	-89,765	-62,348

The fluctuation in costs during years four and five can be attributed to resource to administer the scheme. In year four there was a significant cost attributed to temporary staff recruited to help coordinate a major broadband build in West Berkshire. A proportion of the cost for temporary staff was paid for by the Promoter, which has been subtracted from the total operating cost shown. The decreased cost in year five is due to several staff vacancies, which were subsequently filled in year six therefore resulting in an increase in this year.

The year six income decrease is mainly attributed to a decrease in application volumes and the introduction of the Department for Transport's digital service, Street Manager. This has led to more work identified as working outside traffic sensitive times, and therefore a lower category permit fee.

Across years four through six the Council has been sustaining a deficit to operate the scheme. In consideration to this and further planned changes to increase resource the Council will seek to vary the permit scheme in 2022 with revised fee levels.

Scheme benefits must be set against scheme costs to determine value for money – these costs include setup costs, operating costs and capital costs. In addition to the costs of operating the permit scheme by the Council, it is important to recognise that there are costs also borne by Promoters in operating under the permit scheme. These will include the permit fees, additional administration costs in complying with the permit scheme and costs related to changes in working practices such as off-peak and weekend working.

Detailed promoter cost data has not been available, but in line with evidence gathered from other permit scheme evaluations and adopted as the default assumption in the National Permit Scheme Evaluation, an estimate of 20% of local authority operating costs relating to Statutory Undertaker works has been applied.

Scale and characteristics of works for analysis

For the purposes of the CBA works are disaggregated by type of traffic management, which has important implications on the scale of impact of those works on highway users.

The remainder of works involved no incursion into the carriageway and have been assumed to have no impact on road users. It should be noted that this is a conservative assumption as even non-carriageway works are likely to incur some impact, whether to road users or on wider society.

The estimated impact of the works with incursion into the carriageway have been modelled using the **QUEUES AND DELAYS AT ROADWORKS (QUADRO)**. QUADRO was originally developed for the DfT and designed to assess and monetize the impact of delays due to works.

Having developed costs for every work type, each work within the data used for this evaluation has been assigned an impact cost, according to its characteristics and the duration of the work. The modelled impact of typical works in West Berkshire forms the basis of the benefits calculation.

These impact estimates include the following elements:

- Road user travel time (delay caused to consumer and business as a result of works)
- Road user vehicle operating costs (the impact of delay and diversion on vehicle operating costs for consumers and business)
- Accident costs
- Emissions costs (resulting from congested conditions and diversion)
- Indirect tax revenue (increased tax revenue to the exchequer because of higher fuel consumption)

The table **Estimated work impact cost by traffic management per operational year** shows the total estimated impact cost for work undertaken for each year by traffic management type

Estimated work impact cost per operational year

Traffic Management	Permit Scheme Year		
	Y4 (2018/19)	Y5 (2019/20)	Y6 (2020/21)
Some Carriageway Incursion	82,939	67,437	57,470
Passive Traffic Control	160,344	294,411	204,379
Positive Traffic Control	3,926,212	4,451,954	3,869,610
Lane Closure	8,317,292	2,021,399	6,930,204
Road Closure	4,068,210	3,089,498	3,970,911
Grand Total	16,554,997	9,924,698	15,032,574

Aggregation of the modelled impacts of works occurring in West Berkshire defines the scale of social cost of these works. These range from c.£10 million to just over £16 million per annum, reflecting the number and type of works undertaken during each year.

- Average cost impact of £671 day of work (2020 prices).

It should be noted that work volumes vary year on year for a range of reasons, and therefore variance in roadwork impact cost should not be solely attributable to the permit scheme introduction.

Whilst QUADRO covers most of the standard monetised elements of work impact, an off-model adjustment was made to account for reliability impacts.

DfT guidance recommends that this be captured through application of an uplift to journey time costs/benefits. The recommended uplift factor is 10-20%. A factor of 15% has been adopted for this evaluation to be consistent with this recommendation.

Quantification of benefit of a permit scheme

The benefits of the permit scheme are expected to be achieved through more efficient and better managed work events taking place compared to the patterns observed before scheme implementation. Relating observed changes directly to the scheme is complicated by the range of factors which influence work occurrences.

For the CBA, the comparative scenario is one in which the permit scheme had not been implemented and is therefore by its very nature hypothetical and unobservable. The default assumption relating to anticipated impact of a permit scheme has been to take an assumed 5% reduction in work impact in the absence of local evidence (as stated in the DfT Permit Scheme Evaluation Guidance, 2016).

The DfT's national permit scheme evaluation provided evidence of observed changes in works patterns, with the overall impact in terms of reduced works impact estimated at 5.4%. In line with this evaluation, an impact reduction of 5.4% has been adopted as the most robust source of observed evidence of impact.

Accordingly, the societal impact of works observed in the first three years of the permit scheme operation can be expected to represent 94.6% of the overall societal cost of works which would have been incurred in the absence of the permit scheme. The calculated scheme benefit of years four to six are £937,391, £561,965 and £851,187 respectively.

- The average annual permit scheme benefit is £783,514 (2020 prices)

The cost benefit appraisal requires that scheme benefit be appraised against scheme costs over the whole appraisal period, which in this case is recommended as being 25 years in the DfT permit scheme appraisal guidance.

Consequently, the benefits are projected forward over following years, taking an average of the three observed post-implementation years, with impacts increasing in real terms to reflect growth in values of time, vehicle operating costs, accident savings and emissions costs.

In consideration to future changes to the permit scheme, and the ongoing viability of the CBA, which such a high benefit-to-cost ratio any increase in cost shouldn't impact the overall economic benefit of the scheme. Further evaluations (year nine) will consider this in more detail.

Appraisal Results

The cost benefit analysis takes the benefits and costs established from the first year of operation projects these over the 25-year appraisal period. The future cost and benefit streams are discounted using the standard discount rate of 3.5%, meaning that near term costs and benefits are valued more highly than those occurring later in the appraisal period.

The benefit to cost ratio (BCR) is a measure of value-for-money exhibited by a scheme.

- With a BCR of 5.3 the permit scheme can be defined as demonstrating 'Very High Value for Money'.

It should be noted that with schemes generating significant revenues the BCR can become very sensitive to inputs. It should be interpreted alongside the net present value of the scheme to provide a complete picture of scheme performance.

The full breakdown of the costs and benefits are shown in the **Analysis of Monetised Costs and Benefits (AMCB)** table (below). There may also be other significant costs and benefits, some of which cannot be presented in monetised form.

The principal benefits of the scheme are derived from time savings for commuters and others. There are also positive benefits related to reduced accident rates (roadwork sites tend to have higher accident rates than non-work sites) and greenhouse gas emissions savings.

The results of the cost-benefit analysis demonstrate that the impact of the scheme is found to be positive, with the benefits to road users and wider society comfortably outstripping the cost of scheme operation and promotor cost burden.

The Analysis of Monetised Costs and Benefits (AMCB) includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Analysis of Monetised Costs and Benefits

Noise		(12)
Local Air Quality		(13)
Greenhouse Gases	857,371	(14)
Journey Quality		(15)
Physical Activity		(16)
Accidents	737,297	(17)
Economic Efficiency: Consumer Users (Commuting)	3,896,712	(1a)
Economic Efficiency: Consumer Users (Other)	5,845,069	(1b)
Economic Efficiency: Business Users and Providers	2,523,559	(5)
Wider Public Finances (Indirect Taxation Revenues)	1,390,352	(11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	12,469,657	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	2,335,457	(10)
Present Value of Costs (see notes) (PVC)	2,335,457	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	10,134,200	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	5.34	BCR=PVB/PVC

Emissions savings

These emissions savings are driven by more efficient vehicle movements, and the avoidance of the 'stop-start' movements associated with works.

QUADRO places a monetary value on emissions savings by applying a 'cost of carbon' to the amount of carbon generated because of works, such as additional fuel due to idling, or diversions around works or road closures.

In the most recent year of the scheme, the carbon emission generated by works within the area, as calculated within QUADRO, were valued at £902,110 (2020 prices), which represents around 6% of overall work impact cost.

The implied carbon emissions attributable to works amounts to 12,799 tonnes for year six, equivalent to 4.1% of overall highway related carbon emissions (excluding motorways) produced within West Berkshire annually.

In line with the broader assumptions about permit scheme impacts, on the basis that emissions resulting from works are 94.6% of the level they would have been in the absence of the scheme, would lead to estimated:

- Annual carbon emission savings of 691 tonnes CO₂ from reduced delays.

To set this emission saving in context, using the typical emissions of new cars sold in the UK currently, this reduction amounts to an equivalent saving of:

- 575,500 annual car kilometres CO₂ reduced.

Glossary and Common Terms

Council	West Berkshire Council including their capacity as a Local Highways Authority.
DfT	Department for Transport
Duration of work	A works duration is calculated in calendar days based on the actual or proposed works start date and the actual or estimated works end date, inclusive of both days. Therefore, a works with an actual start date of 1st April and an actual end date of 5th April would equate to 5 days.
EToN	The Electronic Transfer of Notifications, the nationally agreed format for the transmission of information related to works between the Council and those undertaking works.
HAUC	The Highway Authorities and Utilities Committee.
LHA	Local Highway Authority.
NRSWA	New Roads and Street Works Act 1991.
PAA	Provisional Advanced Authorisation, which is a notice sent only in relation for Major works 3 months in advanced of the proposed start with a higher-level of detail for the intended works.
Permit	Permission sought by a Promoter to undertake works on the highway, in accordance with the Permit Scheme.
Permit condition	<p>The capability for the Council to apply conditions to a permit, and therefore the work, is one of the primary methods to control and coordinate works through a permit scheme.</p> <p>The conditions that can be applied are set out within Statutory Guidance, <i>each with a reference code comprising NCT with a unique number</i>, within the following categories: date and time constraints; storage of materials and plant; road occupation and traffic space dimensions; use of traffic management provisions; work methodology; consultation and publicity of works; and environmental considerations for noise.</p>

Permit Scheme	The West Berkshire Council Permit Scheme
Permit Scheme Regulations	The Traffic Management Permit Scheme (England) Regulations 2007, Statutory Instrument 2007 No. 3372 made on 28 November 2007 and the Traffic Management Permit Scheme (England) (Amendment) Regulations, Statutory Instrument 2015 No. 958 made on 26th March 2015.
Permit Variation	The process to change an agreed permit to reflect current or proposed changes in the works.
Promoter	A person or organisation responsible for commissioning activities [works] in streets covered by the Permit Scheme - either an Undertaker or a participating Council as a highway or traffic authority.
Statutory Guidance	The Traffic Management Act (2004) Statutory Guidance for Permits.
TMA	Traffic Management Act 2004
Undertaker	Statutory Undertaker as defined within Section 48(4) of NRSWA.
Work	Also referred to as an activity. Work that should be registered to the Council carried out by a statutory undertaker, as a street work, or for the Council, as a road work.
Works category	Every work is assigned a category, based on the following: Major works are works that are 11 days or more in duration <u>or</u> require a temporary traffic regulation order, <i>such as a road closure</i> . Standard works are non-Major works between 4-10 days. Minor works are non-Major works with a duration of 3 days or less. Immediate works are either emergency or urgent works that require an immediate start.

References

i As defined in the HAUC(England) Advice Note: Standard Permit Response Codes.

2010 is the default base year for the DfT's Webtag appraisal guidance. A common base year allows costs and benefits from different years to be compared in a common unit of account.

HUSSAIN, R.S. ... et al, 2016. Evaluating the road works and street works management permit scheme in Derby, UK. 95th Transportation Research Board Annual Meeting, 10th-14th January 2016, Washington DC

DfT Advice Note For local highway authorities developing new of varying existing permit schemes, June 2016.