



Annual Permit Scheme Evaluation Report

Year 2 (January to December 2021)

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1. Executive Summary

The Dorset Permit Scheme was introduced on 16th January 2020, replacing the noticing process that had previously been in place. The Permit Scheme applies to works on all adopted and publicly maintainable streets within the administrative boundaries of Dorset Council (DC), including works undertaken by Highway Authority and Statutory Undertakers. This report evaluates the operational performance of the permit scheme in its second year covering the period from 1st January to 31st December 2021.

The successful introduction of the scheme has resulted in greater control over road and street works taking place in Dorset's network ensuring that works are carried out at the least disruptive time. Reducing durations, together with suitable Traffic Management, has reduced the impact experienced by the public.

In the second year of Permit Scheme operation, the recorded number of days where streets were occupied affecting the community has reduced again. For utility work, this did increase by 8,444 days due to deferred works caused by COVID and an increase in works by fibre companies. This is still 1,348 days less than pre-permit years. Dorset's own works reduced by a further 3,336 days occupation in Year 2 in addition to the 10,397 days' reduction in Year 1. The total occupation of the highway in Year 2 was 52,420 days. This is 15,081 days less than the last year of noticing or a 22% reduction on the baseline figure.

Dorset Council has continued to work diligently with all promoters during Year 2 to achieve the key objectives of the Permit Scheme sustaining the collaborative approach and ongoing dialogues. The average duration of works reduced by 13% for external work promoters in Year 1, from 3.9 days to 3.4 days. However, this was slightly increased to 3.6 days in Year 2 which can be attributed to the higher volumes of longer duration works on the network. An average of circa 90% of registrations were completed with permanent reinstatement first time, which is commendable when compared to the industry standards.

Dorset Council received a total of 28,963 Permit and Permit Variation applications during the period, out of which 22% were received from Dorset Highways and 78% from 32 external work promoters. On an average 79% of these applications were granted which shows good cooperation between the council and all work promoters. Enhanced communication and advanced planning have ensured that only 14% of the applications were refused and 1% deemed (majority of which are on private streets). During this period, the traffic team has encouraged all work promoters to improve upon the quality of information submitted for permit applications and modifications.

Dorset Council has continued to demonstrate good collaboration and parity of treatment with all work promoters. In Year 2 of the scheme operation, 12.2% for Dorset permit applications were refused as compared to 14.7% of external promoter's applications. Further, 96% of extension requests made by external work promoters were granted irrespective of more complex nature of their jobs. Approximately 61% of early start requests for both internal and external work promoters were granted. In addition, there were 412 instances of collaborative working in Year 2 which is 51% higher than Year 1.

The scheme recorded a deficit of £51,533 in Year 1, and a further £60,429 deficit in Year 2 making an aggregate loss of £111,962 in the first 2 years or 7.8% of the total operating cost to process utility works promoter permits granted. This reported loss consists of two components:

- Effect of salary and other staff overhead costs that has increased since the permit fees were set prior to the introduction of the scheme.
- Incentives and discounts to permit fees charged to utility works promoters in some circumstances (e.g. working on traffic sensitive streets wholly outside of traffic sensitive times, collaborative working practices).

Dorset Permit Scheme continues to deliver excellent value for money in its second year. The 22% saving in occupancy in Year 2 (52,420 days compared with 67,501 in 2018) effective reduction in occupancy of the network in the second year is significantly higher than the 5% minimum stipulated in the statutory guidance for authorities implementing a permit scheme. The updated CBA recalculated the annual impact on the network at £45.1M in Year 2, a 22% increase in modelled impact compared with Year 1. The 22% reduction in occupancy recorded for all works produces a BCR of 17.1 and a NPV of £8,194,095. This is well above the DfT value for money threshold of 2.0 for the recommended 5% occupancy saving.

Based on Year 2 analysis of the Dorset Permit Scheme, following recommendations have been made for successfully operating the scheme.

Recommendation 01:

There has been an aggregate loss of £111,962 in the first 2 years or 7.8% of the total operating cost to process utility works promoter permits that were granted. It is recommended that a full review of costs and income is undertaken at the end of Year 3, once all operating costs and allowable overheads are known, with an appropriate adjustment to permit fees charged, if deemed necessary.

Recommendation 02:

The significant reduction in occupancy of the road network recorded in Year 1 has been slightly impacted due to a small increase in the average duration of utility

works. This is a result of the almost two-fold increase in number of Major works and a 20% increase in Standard works, both generally longer duration works. Hence, it is recommended that the estimated durations submitted with permit applications in Year 3 to be monitored to avoid any further slippage in the stated scheme benefits.

Recommendation 03:

Review utility application permit conditions to see if all stated conditions are necessary and required, with an intent of reducing the amount of breach of conditions and infringements in Year 3.

Recommendation 04:

The number of highway works recorded in Year 2 has reduced again, following a reduction reported in Year 1. It is recommended that highway works undertaken in Year 3 be reviewed to ensure all works falling with the remit of the permit scheme have an appropriate permit.

2. Introduction

This report sets out the operational performance of Dorset Council's Permit Scheme in its second year.

The Traffic Management Act 2004 (TMA), Part 3 Sections 32 to 39 and the Traffic Management Permit Scheme (England) Regulations 2007 and Traffic Management Permit Scheme (England) (Amendment) Regulations 2015 make provision for Permit Schemes to be introduced in England. The Dorset Permit Scheme was adopted by the council on 16th January 2020 and reflects the requirements of this legislation. The scheme supports our duties under both section 59 of the New Roads and Street Works Act 1991 and section 16 of the Traffic Management Act 2004.

Operational review of the Permit Scheme in Year 1 (2020) had proposed various recommendations for continuous improvement in order to meet objectives of the scheme. This report further reviews the Year 2 performance along with scheme objectives and recommendations from Year 1, in order to recommend areas of potential improvements in Year 3.

Recommendations – Year 1		Status	Commentary
1	There has been an under-recovery of £51,533 (circa 8.5%) of total fee income, therefore we recommend that costs and utilisation of resources to be monitored through the next year. Decision to be taken on proposed increase of fee across all permit types if the trend continues.	Monitor	Deficit amount of £60,429 has been recorded in Year 2, resulting in a net deficit of £111,962 in the first 2 years of operating the Permit Scheme. Hence, we propose to continue monitoring the operating costs in Year 3.
2	Significant reduction in occupancy of highways has been noted in Year 1, contributed by amount of works undertaken and treatment due to clustering of works from the base level estimates. Hence, Dorset Council to continue monitoring of durations for all works against the Year 1 levels.	Monitor	The number of highway works recorded in Year 2 has further reduced by circa 21% from Year 1. Hence, we propose to monitor the number of works in Year 3 in order to assess further impact on the occupancy of the road network.
3	Review utility application permit conditions to see if all stated conditions are necessary and required, with an intent of reducing the amount of breach of conditions and infringements in Year 2.	Monitor	Permit conditions used for utility applications in Year 2 demonstrated a significant increase from Year 1. We propose to continue monitoring this in Year 3 to support better coordination of work activities.
4	Discuss and analyse standard system reports with EToN Developer to address	Fulfilled	During Year 2 of Permit Scheme operations, Dorset

Recommendations – Year 1	Status	Commentary	
	data related observations or conditions applied for reporting to Department for Transport (DfT).		Council has actively engaged with the EToN developer to highlight deviations in data represented between Street Manager and standard Confirm (KPI). The issue has been resolved.

3. Objectives of the Dorset Permit Scheme

The purpose of the scheme is to enable Dorset Council to improve on the strategic and operational management of the highway network through better planning, scheduling, and management of activities, to minimise disruption to the road network and its users. It also aims to enable better coordination of activities which links into Dorset Council's service priorities of reducing traffic congestion and supporting safer travel. The objectives of this Permit Scheme are detailed in Section 3 of the scheme document and key factors considered for improving performance include:

- Enhanced coordination and cooperation
- Encouragement of partnership working between the Permit Authority, all Promoters, and key stakeholders.
- Provision of more accurate and timely information to be communicated between all stakeholders including members of the public.
- Promotion and encouragement of collaborative working
- Improvement in timing and duration of activities particularly in relation to the busiest streets within the network
- Promotion of dialogue with regard to the way activities are to be carried out.
- Enhanced programming of activities and better forward planning by all Promoters

During second year of this operational permit scheme, average occupation of the highways by utility companies has reduced by 8% from the 3.9 days baseline to 3.6 days in Year 2. The average occupation of the highways by Dorset Council has reduced by 53% from 6.6 days baseline to 4.4 days in Year 2. Overall, the occupancy of highways has reduced by 33%.

It must be noted that the figure for Dorset Council's own works may not reflect a true comparison of occupation reduction as volume of works used for analysis were reduced by 81% due to effective clustering. This has been achieved by having regular dialogues with work promoters and by ensuring that conditions on the permit are met.

Table 1: Occupation of the highway by Utility Companies

	Noticing 2018	Year 1	Year 2	Difference (Year 2 – Noticing 2018)
Average duration (days)	3.9	3.4	3.6	-0.3 (8%)
Total number of days worked	41,782	31,990	40,434	-1,348 (3%)

Table 2: Occupation of the highway by Dorset Council

	Noticing 2018	Year 1	Year 2	Difference (Year 2 – Noticing 2018)
Average duration (days)	6.6	4.4	4.4	-2.2 (33%)
Total number of days worked	25,719	15,322	11,986	-13,733 (53%)

At the time of implementing the Permit Scheme it was identified that majority of the highways works (reactive maintenance) are not comparable to works carried out by external promoters in terms of their duration and complexity. Hence, it was decided that relevant highways work will be clustered for the purpose of permitting and follow-on work notices. This has facilitated a more realistic representation for monitoring performance of the permit scheme.

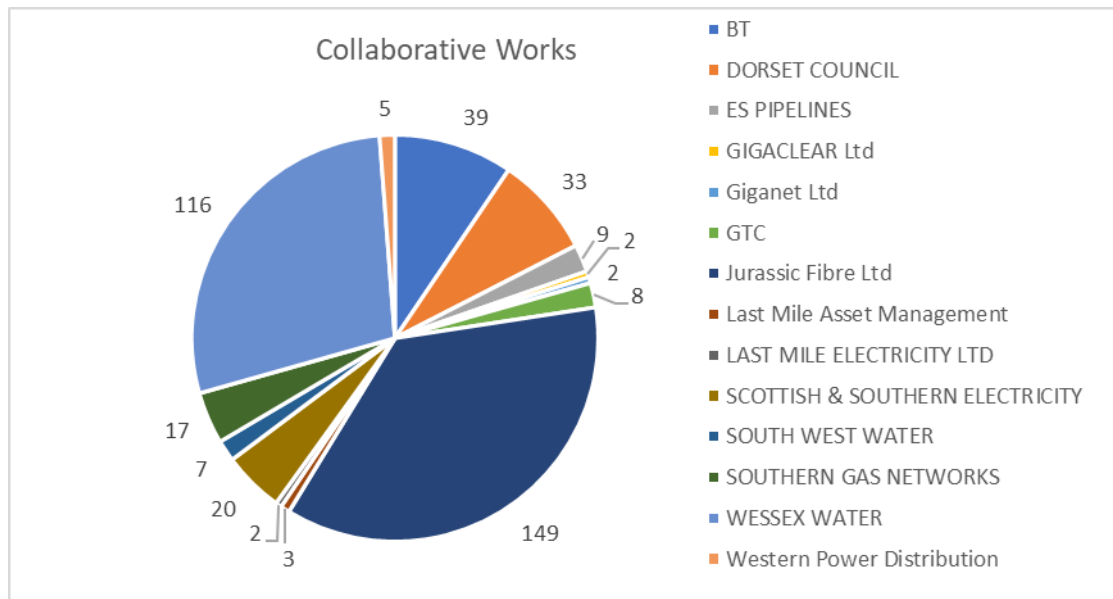
The permit scheme has enabled Dorset Council to have greater control on the works carried out by applying conditions on the way works are managed by the work promoter, and challenging variation requests on the duration of works. This has resulted in effectively managing and reducing disruptions across the authority's network.

Enhanced communication and advanced planning have resulted in a small number of works being refused or deemed. The traffic team has spent significant time throughout the second year, on ensuring high quality of information submitted for permit applications and modifications. Out of all applications received 14% were initially refused and 1% deemed (KPI 1). Out of all permits issued, only 10% of the works requested duration extensions, 96.5% of these extensions were approved and 3.5% were refused where they were found to be unreasonable (KPI 3).

Improved forward planning by works promoters has increased Phase one registrations where permanent reinstatement was carried out at the same time. On average 90% of Phase one registrations were completed with permanent reinstatement, which reduced the need to return to the site in future, causing lesser disruption.

Dorset Council has encouraged collaborative working arrangements, including trench, road space and duct sharing between promoters wherever possible. In total 412 instances of collaborative working were recorded during Year 2 of Permit Scheme operations which is 51% higher when compared to Year 1. Figure 1 presents a breakdown of collaborative works by promoters.

Figure 1: Collaborative works by promoters



In the second year of Permit Scheme operations, the quality of data supplied by all work promoters has significantly improved. A thorough review of all permit applications and work notices allows Dorset Council to identify opportunities for improving coordination with work promoters. Issuing of Fixed Penalty Notices (FPNs) where promoters failed to submit accurate and timely information (Appendix 2) has encouraged further improvement of data quality. The scheme has also encouraged planning activities prior to submitting permit application which has resulted in fewer rejections and has helped all users of the highway.

The second year of the permit scheme has focused on streamlining the operations in addition to fulfilling its objectives. Dorset Council has worked with all promoters to improve standards of work and to ensure all the conditions of working are met. It is our objective to improve dialogue with all promoters and to work constructively and collaboratively. We have discussed failures with teams on-site and with their managers to encourage improvement but have subsequently issued FPNs where necessary. Out of the total FPNs issued (1216) during the year, 49% were related to failure to provide the start and stop notices on time and 46.5% were related to breach of permit conditions.

4. Fee Structure

The Traffic Management Permit Scheme (England) (Amendment) Regulations 2015 require that the permit authority to review their existing fee levels to determine if any revision is needed when a surplus or deficit exists. The current fee structure for the Dorset Council Permit Scheme is provided in Table 3.

Table 3: Fee Structure

Permit Type	Reinstatement Category	
	Road Category 0, 1 & 2 or Traffic Sensitive	Road Category 3 & 4 and Non-Traffic Sensitive
Provisional Advance Authorisation	£96	£64
Major works - over 10 days and all major works requiring a traffic regulation order	£196	£105
Standard activity (also Major works – from 4-10 days)	£120	£61
Minor activity (also Major works – up to 3 days)	£60	£31
Immediate activity	£56	£27
Permit Variation	£45	£35

For Year 2 (Jan to Dec 2021), total Permit Fee income invoiced was £724,314. The operating costs to process utility permit applications for the same period is calculated at £784,743, out of which employee cost is £680,039 and total allowable operational factor costs are £104,704. Hence, an overall deficit of £60,429 has been recorded for Year 2.

Total permit fee income increased from £607,678 in Year 1, following a 20% increase in the number of utility works completed in Year 2.

The scheme recorded a deficit of £51,533 in Year 1, making an aggregate loss of £111,962 in the first 2 years or 7.8% of the total operating cost to process granted utility permits applications.

This reported loss consists of two components:

- Effect of salary and other staff overhead costs that has increased since the permit fees were set prior to the introduction of the scheme.
- Incentives and discounts to permit fees charged to utility works promoters in some circumstances (e.g. working on traffic sensitive streets wholly outside of traffic sensitive times, collaborative working practices).

During the COVID19 pandemic, coordination was more challenging due to work from home, and permit team efforts were higher than anticipated. Furthermore, essential activities on Category 0-2 and Traffic sensitive streets were almost 50% higher than the scheme forecasts.

Dorset Council has carefully considered a potential increase of 11% fee across all permit types, to recover ongoing losses and recover the Year 1 and 2 losses over subsequent years. However, it was decided that we keep fees unchanged for now and undertake a full review of fee income, operating costs, and permit fee charges at the end of Year 3.

5. Costs and Benefits

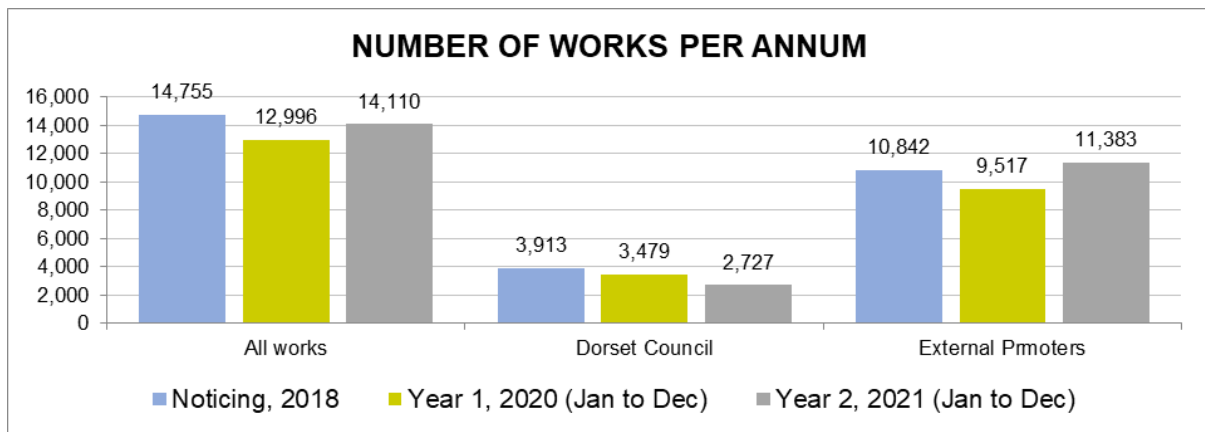
The Traffic Management Permit Scheme (England) (Amendment) Regulations 2015 require that the Permit Authority also shall consider whether the permit scheme is meeting Key Performance Indicators (KPIs) where these are set out in the guidance.

The benefits of permit schemes are normally quantified by multiplying the number of days saved on the network over the whole year multiplied by the average cost per day incurred by motorists travelling through traffic managed sites.

As well as a change in the average duration of works, the number of works completed in each year will also have an impact on total occupancy and the comparison in each year.

The number of works completed in Year 1 and Year 2 are compared with the adjusted noticing benchmark period in Figure 2a.

Figure 2a: Number of Works Per Annum



The total number of works completed in Year 2 has returned to a similar level as the 2018 Noticing benchmark period. The number of works completed in Year 2 are 645 or 4% lower than recorded during the 2018 Noticing period.

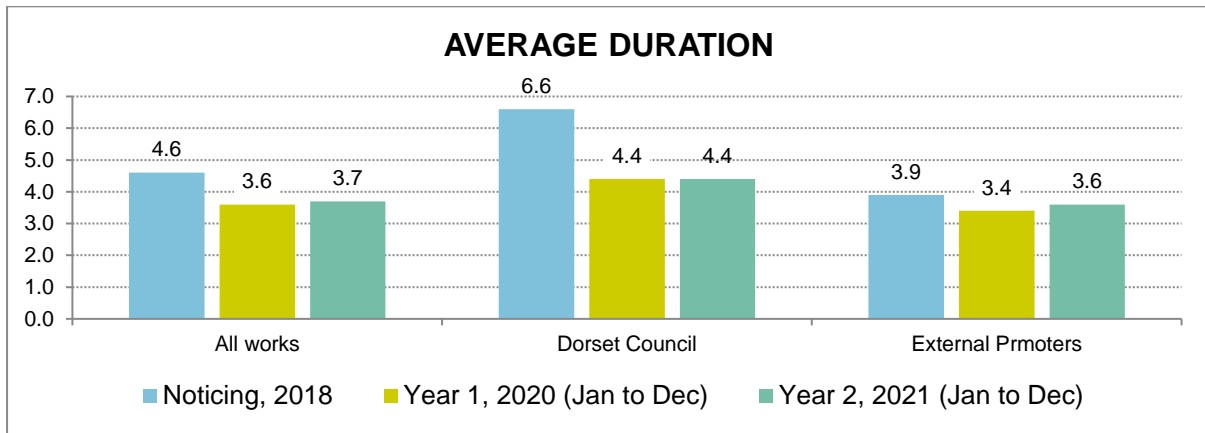
Utility works have increased by 1,866 or 20% compared with Year 1. (Note: this is possibly the combination of COVID lockdown measures reducing works during 2020 and an increase in the number of works undertaken by fibre companies in 2021 plus a catch up of works deferred from 2020).

Works completed by the highway authority have reduced by 752 compared to the previous year.

The net effect is an increase of 1,114 works completed or 9% more than Year 1.

The average duration of works in each year is shown in Figure 2b.

Figure 2b: Average Duration of Works



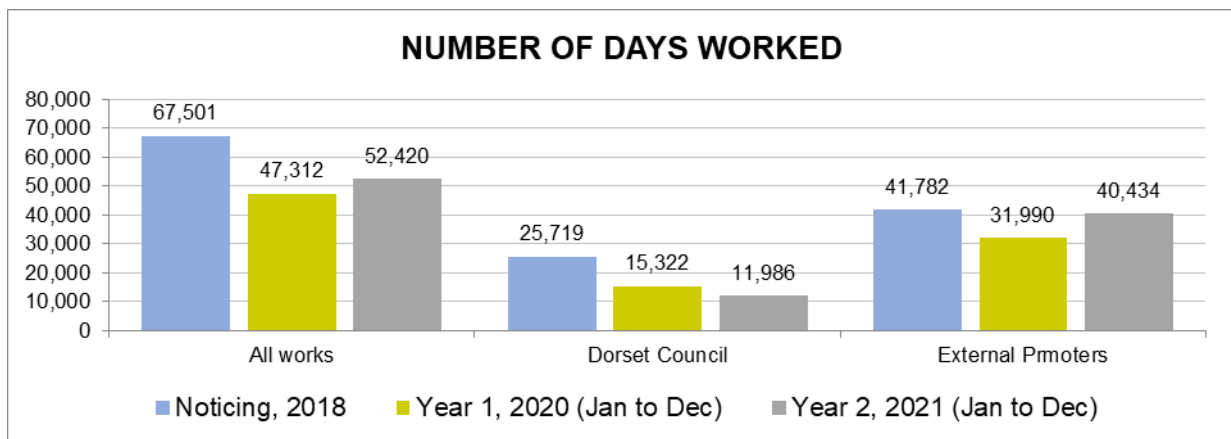
The overall reduction in average duration for all works achieved in Year 1 has been largely maintained in Year 2. Average duration reduced from 4.6 days under Noticing to 3.6 days in Year 1. Year 2 has seen a small increase in overall average duration to 3.7 days.

The significant reduction in average duration for highway works, reducing from 6.6 days to 4.4 days, has been maintained in Year 2.

The average duration for utility works in Year 2 has increased slightly from 3.4 days to 3.6 days. Year 2 still shows a significant reduction from 3.9 days recorded in the Noticing benchmark period. This small increase is a result of an increase in the number of Major works (from 361 in Year 1 to 624 in Year 2) and Standard works (from 654 in Year 1 to 865 in Year 2), These work categories have an average of 18.1 days and 6.7 days, respectively.

The effect of the change in number of works and average duration is demonstrated in the total occupancy statistics, presented in Figure 2c.

Figure 2c: Number of Days Worked



The year 2018 was used as the base year for forecasting Permit Scheme activities when developing the business case and Cost Benefit Assessment for the proposed scheme.

Under Noticing, 81,980 working days were recorded between January to December 2018. This includes 14,479 Minor highway works of less than 1 day duration; short duration reactive repairs recorded before the scheme went live, that do not require a permit now the scheme is operating.

The benchmark case (presented in the above charts) has been reduced to 67,501 working days by excluding these Minor highway works to avoid over-stating the benefits of the scheme when comparing the operation in Year 2.

For the equivalent 12 months period from January to December 2021, corresponding to the second year of the Permit Scheme operation, 52,420 working days were recorded. A saving of 15,081 days worked on the network (or 22% lower than the adjusted noticing benchmark period).

The overall saving is a result of a 53% reduction in occupancy for highways works and 3% reduction recorded for works completed by external work promoters. As noted above, the increase in occupancy for utility works compared with Year 1 is a result of the 20% increase in the number of works completed in Year 2 (increasing from 9,517 in Year 1 to 11,383 in Year 2). Utility works still show 8% reduction in average duration from 3.9 days under Noticing in 2018 to 3.6 days in Year 2.

The 22% saving in occupancy in Year 2 (52,420 days compared with 67,501 in 2018) effective reduction in occupancy of the network in the second year is significantly higher than the 5% minimum stipulated in the statutory guidance for authorities implementing a permit scheme.

The Cost Benefit Analysis conducted in 2019 (source: The Dorset Council Permit Scheme – Final Report Cost Benefit Analysis, January 2020, Table 11 page 26) calculated the impact of 1 year worth of typical street works at £32.3M (stated at 2010 values, in line with standard CBA procedures).

The 15,347 works completed in the Noticing period have an average duration of 4.6 days, this equates to an average cost of £457 per day for all work types. Therefore, the calculated monetary benefit to transport users of the Permit Scheme in Year 2 is:

- All works saving £6.90M (at 2010 values) or 21% of the total annual impact
- Highway works saving £6.28M (at 2010 values) or 19% of the total annual impact
- Utility works saving £0.62M (at 2010 values) or 2% of the total annual impact

The reduction in occupancy of utility works and small saving in annual impact (£0.62M) is achieved despite a 20% increase in the number of works recorded in Year 2, compared with the noticing period.

The effective saving (if the number of works in each year is the same) is higher, at £5.73M or 18% of the total annual impact due to the reduction in average duration from 3.9 days to 3.6 days.

Conversely, the effective saving for highway works after discounting the effect of the reduction in the number of works recorded in Year 2, is £3.90M or 12% of the total annual impact.

The effective monetary benefit (discounting the effect of changes in the number of works completed in each year) in Year 2 is:

- All works saving £9.63M (at 2010 values) or 30% of the total annual impact
- Highway works saving £3.90M (at 2010 values) or 12% of the total annual impact
- Utility works saving £5.73M (at 2010 values) or 18% of the total annual impact

In addition to calculating the monetary benefit of the first year of the Scheme, this section also re-evaluates the Cost Benefit Analysis (CBA) replacing the estimated number of works and works types used in the business case assessment with the actual numbers recorded in the second year.

The methodology involves the following steps using the Year 2 data records:

- Identify the number of works-by-works category and road type
- Update forecast opening year 2020 Quadro modelling with volumes recorded in 2021
- Recalculate the annual impact using updated Quadro model outputs
- Recalculate the operating costs (replacing the Fees Matrix forecast with the actual number of permit works stopped records)
- Recalculate the NPV and BCR for default 5% saving and recorded 22% saving in working days

The updated CBA recalculated the annual impact on the network at £45.1M in Year 2, a 22% increase in modelled impact compared with Year 1. This is a result of the increase in the number of works completed (from 12,996 in Year 1 to 14,110 in Year 2), particularly works operating with active traffic management (an additional 475 works requiring road or lane closures and 597 works requiring temporary traffic signal control) and a slight increase in the average duration of utility works completed in Year 2.

A 5% reduction in occupancy resulted in a BCR of 2.9 and a Net Present Value (NPV) of £951,441 per annum. This is an increase over the BCR of 2.3 for the scheme opening year. This is due to the recalculated annual impact of works (discussed above) and the reduction in number of highway permits reducing the overall scheme operating cost relative to the cost to process utility permit applications.

The 22% reduction in occupancy recorded for all works produces a BCR of 17.1 and a NPV of £8,194,095.

This is well above the DfT value for money threshold of 2.0 for the recommended 5% occupancy saving.

This demonstrates that the Permit Scheme continues to deliver excellent value for money in its second year.

6. Key Performance Indicators

Section 20.3 of the Permits Code of Practice states that every Authority that wants to run a Permit Scheme must explain how it intends to demonstrate parity of treatment for all promoters in its application. To demonstrate that the permit scheme is operated with parity, Dorset Council has applied a set of Key Performance Indicators (KPIs) shown below. The data has been extracted and analysed for Year 2 (January to December 2021).

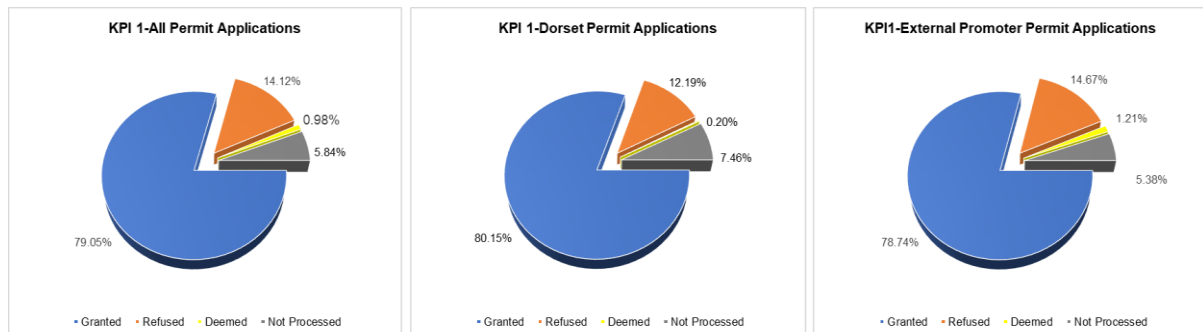
KPI 1: Permit & Variation Applications Received, Granted & Refused

Dorset Council received a total of 28,963 Permit and Permit Variation applications during the period, out of which 22% were received from the Dorset Highways and 78% from 32 external work promoters. Due to clustering of reactive maintenance works, the share of permits applications for Highways may appear lower when compared to other similar size unitary authorities. Table 4 and Figure 3 shows the number of permit applications and variations received, granted, refused, and deemed for the period.

Table 4: Permit Applications & Variations Summary

	Applications	Granted	Refused	Deemed	Cancelled / Superseded
Dorset	6,438	5,160 (80.1%)	785 (12.2%)	20 (0.2%)	480 (7.5%)
External	22,525	17,736 (78.7%)	3,305 (14.7%)	272 (1.2%)	1,1212 (5.4%)
All	28,963	22,896 (79.1%)	4,090 (14.1%)	285 (1.0%)	1,692 (5.8%)

Figure 3: Permit Applications & Variations Received, Granted & Refused



During Year 2 of the Permit Scheme operation, 80% of all permit applications received by Dorset Council were granted, while 12% were refused for valid reasons. Our analysis clearly indicates parity of treatment for all work promoters. The slightly

higher refusal rate for external promoter works is attributed to higher complexity and average durations of such works.

Out of the 285 (1%) deemed applications, 230 (0.79%) were for permits applied on private streets for which Dorset Council had decided to allow work to progress by default.

Further reviews and focused dialogues with all promoters will continue into the Year 3 of operations.

KPI 2: Number of Conditions Applied by Condition Type

A total of 36,971 standard conditions were applied to 22,896 granted permits and variations out of which 87% were related to external (utility) work promoters' applications. The majority of conditions applied to external work promoters' permits relate to Consultation and Publicity (34%), Date Constraints (32%) and Time Constraints (12%). Highway permit conditions are predominantly related to Time Constraints (56%), Consultation and Publicity (30%) and Date Constraints (3%).

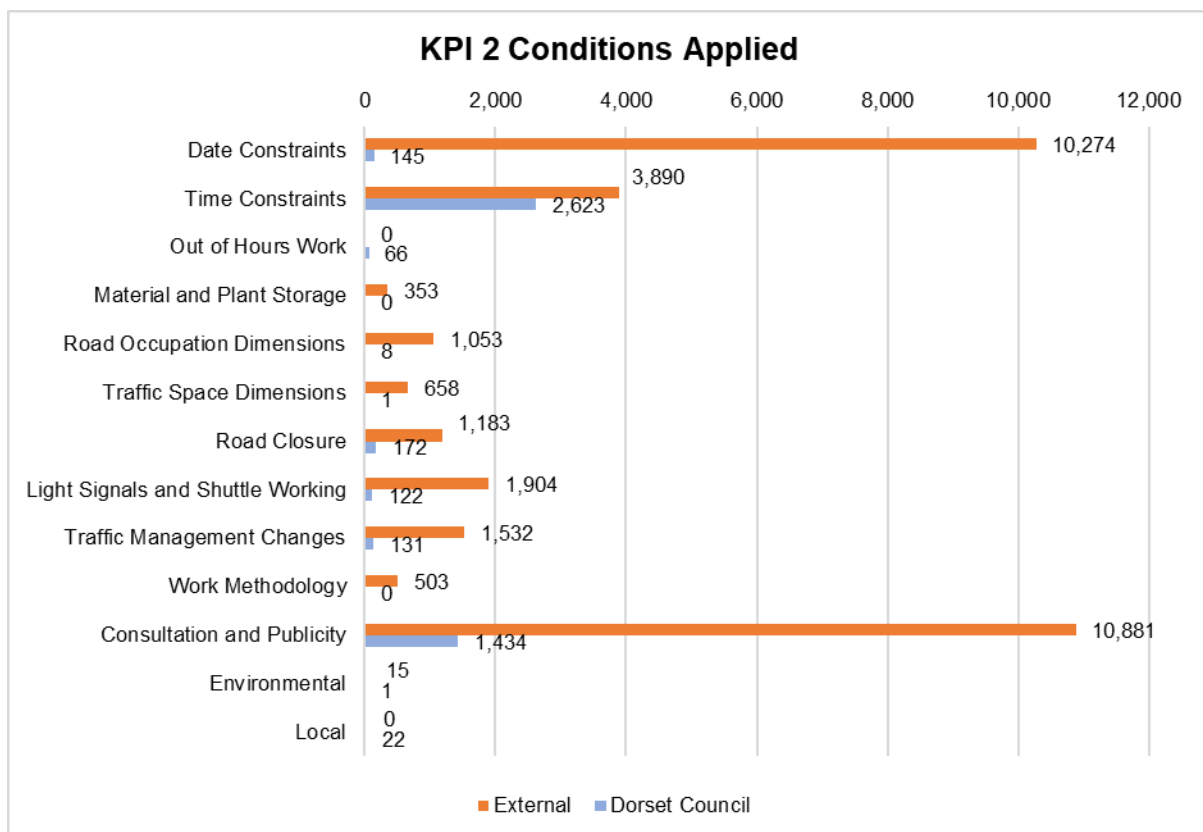
Number of conditions applied to the Highways permits is lower, however this is justified due to lower number of Highways works and permit applications during the period when compared to external work promoters. Further, the type of works combined with effective pre-scheme collaboration and discussions contributed to fewer Road Occupation Dimensions, Light Signals and Shuttle Working conditions required or issued for Highway works which justifies the low overall number of highway permit conditions being issued in Year 2. Table 5 and Figure 4 further illustrates the breakdown and comparative view of conditions applied to the permits.

Table 5: Number of Conditions Applied by Condition Type

Condition	Condition Description	External	Dorset	All
NCT01	Date constraints	10,274	1,45	10,419
NCT02	Time constraints	3,890	2,623	6,513
NCT03	Out of Hours Work	0	66	66
NCT04	Material & plant storage	353	0	353
NCT05	Road occupation dimensions	1,053	8	1,061
NCT06	Traffic space dimensions	658	1	659
NCT07	Road closure	1,183	172	1,355
NCT08	Light Signals and Shuttle Working	1,904	122	2,026
NCT09	Traffic Management Changes	1,532	131	1,663
NCT10	Work Methodology	503	0	503

Condition	Condition Description	External	Dorset	All
NCT11	Consultation and Publicity	10,881	1,434	12,315
NCT12	Environmental	15	1	16
NCT13	Local	0	22	22
	TOTAL	32,246	4,725	36,971
		87%	13%	

Figure 4: Number of Conditions Applied by Condition Type



Permit conditions used for utility applications in Year 2 demonstrated a significant increase from Year 1, It has increased from 62% to 87%. We will continue to monitor this in Year 3 to see if all stated conditions are necessary and required, with an intent of reducing the amount of breach of conditions and infringements.

KPI 3: Number of Approved Revised Durations

Table 6 shows the number of Revised Duration (extension) requests received, granted, and refused for internal and external works.

Table 6: Revised Duration Requests

	External	Dorset	All
Permits Issued	15,126	3,567	18,693
Extension Requests	1,495 (10%)	411 (12%)	1,906 (10%)
Extensions Agreed	1,438 (96%)	401 (98%)	1,839 (96%)
Extensions Refused	57 (4%)	10 (2%)	67 (4%)

Of the permits granted during the evaluation period, only 10% requested duration extensions, 12% for internal works and 10% for external works. Dorset Council demonstrated parity of treatment by granting high number of extensions requested by external work promoters (96%) irrespective of more complex nature of these jobs. Overall, low number of duration extension requests and higher approval rates for these extensions has demonstrated high level of coordination and collaboration with work promoters.

KPI 4: Number of occurrences of reducing the application period (early starts)

The table below captures the number of early start requests received from Dorset's internal and external work promoters, along with their agreements and refusals.

Table 7: Early Start Requests and Agreements

	External	Dorset	All
Permit Granted	14,327	5,948	20,275
Early Start Requests	2,307 (16%)	2,560 (43%)	4,867 (26%)
Early Start Agreements	1,402 (61%)	1,555 (61%)	2,957 (61%)
Early Starts Refused	1,005 (39%)	905 (39%)	1,910 (39%)

Of the 20,275 permits granted (data from EToN system), 26% of the works requested early starts with nearly 43% of Dorset Council works and 16% of Utility works requesting early starts.

Through good communication and dialogue, the impact of each of the early starts were assessed and the permit team granted almost 61% of early start requests

demonstrating good collaboration. The remaining early start requests were rejected due to various reasons such as clashes of works or where the early start was requested too late to be processed on time.

Dorset Council demonstrated parity of treatment on this measure by approving higher than average % of early start requests by external work promoters when compared with their own works.

7. Traffic Management Act Performance Indicators (TPI)

The TMA Performance Indicators (TPI's) are a collection of measures for Works Promoters in the Streetworks Industry designed by Highway Authorities and Utilities Committee (HAUC) UK and EToN Developers' Group (EDG) members. The data extracted from EToN system is representative of the period January 2021 (Q4 20/21) to December 2021 (Q3 21/22).

TPI 1 Works Phases Started

Table 8 shows the count of all Works phases that started by each quarter by promoters. A total of 15,197* works was started from 01st of January 2021 to 31st December 2021, out of which 2,999 were highway works and 12,198 were utility works.

Table 8: Works Phases Started

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BT	666	601	719	832
Clear Channel	0	0	0	1
Energy Assets Networks Ltd	1	0	0	0
ENVIRONMENT AGENCY	0	0	1	0
ES Pipelines Ltd	3	4	0	8
Gigaclear	0	0	14	54
GTC	10	11	5	1
Independent Next Generation Networks Ltd	0	6	8	0
Jurassic Fibre Ltd	27	17	50	55
Last Mile Electricity Limited	1	2	1	0
Last Mile Gas Limited	1	3	3	3
M12 Solutions	0	4	34	44
National Grid Electric PLC	2	0	0	0
NETWORK RAIL -PROMOTERS NATIONAL	13	8	13	18
Romec	6	0	2	6
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	256	237	191	216
South West Water	150	123	215	181
SOUTHERN GAS NETWORKS	251	210	203	206
SSE DATACOM	5	7	6	0
T-Mobile (UK) Limited	6	4	4	4
VIRGIN MEDIA	5	4	13	7
Vodafone	39	56	0	0

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
Wessex Internet Limited	0	0	0	4
WESSEX WATER	1682	1497	1506	1480
Western Power Distribution	58	41	41	32
All Utilities Promoters	3182	2835	3029	3152
Dorset Council	843	924	635	597

* TPI counts may include counts of works that started and were still in progress at the time of cut-off.

TPI 2 Works Phases Completed

Table 9 shows the count of all Works phases completed by each quarter by promoters. A total of 15,201* works phases were completed from 01st of January 2021 to 31st December 2021, out of which 3,000 were highway works and 12,201 were utility works.

Table 9: Works Phases Completed

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BT	653	605	721	839
Clear Channel	0	0	0	1
Energy Assets Networks Ltd	1	0	0	0
ENVIRONMENT AGENCY	0	0	1	0
ES Pipelines Ltd	3	2	2	8
Gigaclear	0	0	13	54
GTC	10	11	5	1
Independent Next Generation Networks Ltd	0	0	14	0
Jurassic Fibre Ltd	26	18	51	56
Last Mile Electricity Limited	1	2	1	0
Last Mile Gas Limited	1	3	1	5
M12 Solutions	0	4	34	44
National Grid Electric PLC	0	1	0	0
NETWORK RAIL -PROMOTERS NATIONAL	13	9	12	19
Romec	6	0	2	6
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	249	232	196	218
South West Water	145	124	214	184
SOUTHERN GAS NETWORKS	239	183	222	223
SSE DATACOM	4	8	6	0

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
T-Mobile (UK) Limited	6	4	3	5
VIRGIN MEDIA	5	4	13	8
Vodafone	39	52	0	0
Wessex Internet Limited	0	0	0	4
WESSEX WATER	1679	1505	1511	1484
Western Power Distribution	60	40	38	35
All Utilities Promoters	3140	2807	3060	3194
Dorset Council	809	944	634	613

* Data represented above has been extracted from the EToN system. Since the implementation of Dorset Permit Scheme, this TPI may include works that started before the observation period and did not receive a work stop notice. The actual number of days worked calculated by work stop notices can be found in Section 5 of this report.

TPI 3 Days of Occupancy Phases Completed

Table 10 shows the count of all Works occupancy days for any works phases that were active (in progress) at any time within a given quarter, only days within the quarter are counted.

Table 10: Days of Occupancy Phases Completed

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BOURNEMOUTH WATER	180	182	184	184
BT	2815	2860	3528	3263
Clear Channel	0	0	0	1
Energy Assets Networks Ltd	21	0	0	0
ENVIRONMENT AGENCY	0	0	1	0
ES Pipelines Ltd	26	25	4	48
Gigaclear	0	0	17	186
GTC	82	162	88	1
Independent Next Generation Networks Ltd	0	48	88	0
Jurassic Fibre Ltd	97	113	254	182
Last Mile Electricity Limited	3	9	5	0
Last Mile Gas Limited	12	60	11	51
M12 Solutions	0	11	103	163
National Grid Electric PLC	559	572	552	552
NETWORK RAIL -PROMOTERS NATIONAL	202	199	230	248
Romec	6	0	2	6

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	1487	1362	1204	1425
South West Water	567	449	902	648
SOUTHERN GAS NETWORKS	5867	6498	7893	6575
SSE DATACOM	46	53	17	0
T-Mobile (UK) Limited	16	9	18	15
VIRGIN MEDIA	189	186	198	147
Vodafone	200	204	92	92
Wessex Internet Limited	0	0	0	6
WESSEX WATER	5796	4646	4610	4702
Western Power Distribution	806	762	822	861
All Utilities Promoters	18977	18410	20823	19356
Dorset Council	5715	5588	3653	4050

* Data represented above has been extracted from the EToN system. Since the implementation of Dorset Permit Scheme, this TPI may include works that started before the observation period and did not receive a work stop notice. The actual number of occupancy days calculated by work stop notices can be found in Section 5 of this report.

TPI 4 Average Duration of Works

Table 11 shows the average duration in days for all those Work phases that were completed within each quarter by promoters. The average duration for all promoters in the 2nd year of scheme's operation is 4.71* days.

Table 11: Average Duration of Works

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BT	1.81	1.88	2.76	1.95
Clear Channel	0	0	0	1
Energy Assets Networks Ltd	21	0	0	0
ENVIRONMENT AGENCY	0	0	1	0
ES Pipelines Ltd	8.67	2.5	12	6
Gigaclear	0	0	1.08	3.44
GTC	8.2	14.73	17.6	1
Independent Next Generation Networks Ltd	0	0	9.71	0
Jurassic Fibre Ltd	3.62	6.44	4.98	3.29
Last Mile Electricity Limited	3	4.5	5	0
Last Mile Gas Limited	12	20	5	11.4
M12 Solutions	0	2.75	3.03	3.7

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
National Grid Electric PLC	0	50	0	0
NETWORK RAIL -PROMOTERS NATIONAL	1.69	2	3.08	3.84
Romec	1	0	1	1
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	5.09	4.93	5.37	5.58
South West Water	3.14	2.84	3.76	3.07
SOUTHERN GAS NETWORKS	12.08	13.52	21.73	19.36
SSE DATACOM	9.25	7.75	2.83	0
T-Mobile (UK) Limited	2.67	2.25	4	4.2
VIRGIN MEDIA	1.8	1	1.08	114
Vodafone	2.82	2.02	0	0
Wessex Internet Limited	0	0	0	1.5
WESSEX WATER	2.52	2.19	1.94	2.05
Western Power Distribution	3.17	3.08	3.87	7.09
All Utilities Promoters	3.39	3.26	4.07	3.99
Dorset Council	5.6	5.92	5.39	6.05

* Data represented above has been extracted from the EToN system. Since the implementation of Dorset Permit Scheme, this TPI may include works that started before the observation period and did not receive a work stop notice. The actual average duration of works calculated by work stop notices can be found in Section 5 of this report.

TPI 5 Phases Completed Involving Overrun

Table 12 shows the count of work phases where the Works Stop Date was after the “Reasonable Period” for the phase for each quarter by work promoters. A total of 217* work phases were completed after the reasonable period, out of which 99 works were Highway works and 118 works were utility works.

Table 12: Phases Completed Involving Overrun

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BT	3	4	8	11
GTC	0	0	1	0
Jurassic Fibre Ltd	0	8	0	0
M12 Solutions	0	2	0	0
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	1	5	6	8
South West Water	1	1	10	1
SOUTHERN GAS NETWORKS	0	2	0	3

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
WESSEX WATER	8	7	17	11
All Utilities Promoters	13	29	42	34
Dorset Council	19	37	24	19

* Data represented above has been extracted from the EToN system.

TPI 6 Number of Overrun Days

Table 13 shows the sum of the total overrun days for those work phases that were completed during the period for each quarter by promoters. A total of 1756* overrun days, out of which 1142 days overrun by Highway works and 614 days overrun by utility works.

Table 13: Number of Overrun Days

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BT	14	11	219	31
GTC	0	0	4	0
Jurassic Fibre Ltd	0	18	0	0
M12 Solutions	0	2	0	0
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	1	21	34	39
South West Water	1	2	32	4
SOUTHERN GAS NETWORKS	0	4	0	27
WESSEX WATER	49	19	50	32
All Utilities Promoters	65	77	339	133
Dorset Council	128	629	238	147

* Data represented above has been extracted from the EToN system.

TPI 7/8 Number of Phase One Registrations/Phase One Permanent Registrations

Table 14 shows the count of works of all sites on the Full Registration notice for the works phase. It also shows the percentage where permanent reinstatement has been carried out in Phase One. On average, 90% of Phase One registrations were completed with permanent reinstatement, which is much higher than the industry standards.

Table 14: Number of Phase One Registrations/Phase One Permanent Registrations

Promoter	Registration	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BT	Phase One Registrations	298	327	370	410
	Phase One Permanent Registrations	282	296	349	389
	% of Phase One Permanent Registrations	95%	91%	94%	95%
Clear Channel	Phase One Registrations	0	0	0	1
	Phase One Permanent Registrations	0	0	0	1
	% of Phase One Permanent Registrations				100%
ES Pipelines Ltd	Phase One Registrations	2	1	1	5
	Phase One Permanent Registrations	1	0	1	4
	% of Phase One Permanent Registrations	50%	0%	100%	80%
Gigaclear	Phase One Registrations	0	0	0	26
	Phase One Permanent Registrations	0	0	0	23
	% of Phase One Permanent Registrations				88%
GTC	Phase One Registrations	8	7	4	0
	Phase One Permanent Registrations	6	6	4	0
	% of Phase One Permanent Registrations	75%	86%	100%	
Independent Next Generation Networks Ltd	Phase One Registrations	0	0	8	0
	Phase One Permanent Registrations	0	0	1	0
	% of Phase One Permanent Registrations			13%	
Jurassic Fibre Ltd	Phase One Registrations	0	4	7	11
	Phase One Permanent Registrations	0	4	4	8
	% of Phase One Permanent Registrations		100%	57%	73%
Last Mile	Phase One Registrations	1	2	1	0

Promoter	Registration	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
Electricity Limited	Phase One Permanent Registrations	1	1	1	0
	% of Phase One Permanent Registrations	100%	50%	100%	
Last Mile Gas Limited	Phase One Registrations	1	3	1	4
	Phase One Permanent Registrations	1	3	1	3
	% of Phase One Permanent Registrations	100%	100%	100%	75%
M12 Solutions	Phase One Registrations	0	0	34	15
	Phase One Permanent Registrations	0	0	6	13
	% of Phase One Permanent Registrations			18%	87%
National Grid Electric PLC	Phase One Registrations	0	1	0	0
	Phase One Permanent Registrations	0	1	0	0
	% of Phase One Permanent Registrations		100%		
Romec	Phase One Registrations	6	0	2	5
	Phase One Permanent Registrations	4	0	2	5
	% of Phase One Permanent Registrations	67%		100%	100%
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	Phase One Registrations	169	150	152	151
	Phase One Permanent Registrations	161	146	140	144
	% of Phase One Permanent Registrations	95%	97%	92%	95%
South West Water	Phase One Registrations	129	113	195	147
	Phase One Permanent Registrations	119	109	184	132
	% of Phase One Permanent Registrations	92%	96%	94%	90%
SOUTHERN GAS NETWORKS	Phase One Registrations	216	156	182	189
	Phase One Permanent Registrations	210	150	170	183

Promoter	Registration	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
	% of Phase One Permanent Registrations	97%	96%	93%	97%
SSE DATACOM	Phase One Registrations	4	5	0	0
	Phase One Permanent Registrations	1	3	0	0
	% of Phase One Permanent Registrations	25%	60%		
T-Mobile (UK) Limited	Phase One Registrations	5	2	3	2
	Phase One Permanent Registrations	5	2	3	2
	% of Phase One Permanent Registrations	100%	100%	100%	100%
VIRGIN MEDIA	Phase One Registrations	5	4	7	7
	Phase One Permanent Registrations	4	4	7	6
	% of Phase One Permanent Registrations	80%	100%	100%	86%
Vodafone	Phase One Registrations	2	6	0	0
	Phase One Permanent Registrations	1	1	0	0
	% of Phase One Permanent Registrations	50%	17%		
Wessex Internet Limited	Phase One Registrations	0	0	0	3
	Phase One Permanent Registrations	0	0	0	3
	% of Phase One Permanent Registrations				100%
WESSEX WATER	Phase One Registrations	1289	1193	1225	1144
	Phase One Permanent Registrations	1140	1073	1082	1007
	% of Phase One Permanent Registrations	88%	90%	88%	88%
Western Power Distribution	Phase One Registrations	20	17	12	17
	Phase One Permanent Registrations	19	17	11	17
	% of Phase One Permanent Registrations	95%	100%	92%	100%

All Utilities Promoters	Phase One Registrations	2155	1991	2204	2137
	Phase One Permanent Registrations	1955	1816	1966	1940
	% of Phase One Permanent Registrations	91%	91%	89%	91%

* Data represented above has been extracted from the EToN system. Please note that we have not mentioned Dorset Council's performance for TPI7/8 as Site registration is not mandatory for the Highways Authority.

TPI 13 Early Start Agreements

Table 15 shows the count of works phases where an "Early Start" has been agreed. There was a total of 2111* early starts agreed out of which 891 were for Highways works and 1220 were for utility works.

Table 15: Early Start Agreements

Promoter	Q4 20/21	Q1 21/22	Q2 21/22	Q3 21/22
BT	53	62	32	46
ES Pipelines Ltd	2	0	0	0
Gigaclear	0	0	8	7
GTC	5	6	4	0
Independent Next Generation Networks Ltd	0	6	6	0
Jurassic Fibre Ltd	1	0	14	7
Last Mile Gas Limited	0	0	2	0
M12 Solutions	0	0	1	3
NETWORK RAIL -PROMOTERS NATIONAL	1	2	1	5
SCOTTISH& SOUTHERN ELECTRICITY NETWORKS	27	18	19	23
South West Water	4	1	0	1
SOUTHERN GAS NETWORKS	65	91	82	71
SSE DATACOM	2	6	6	0
T-Mobile (UK) Limited	3	0	1	0
VIRGIN MEDIA	0	0	1	0
Vodafone	11	7	0	0
WESSEX WATER	44	45	52	28
Western Power Distribution	2	1	6	0
All Utilities Promoters	220	245	235	191
Dorset Council	281	423	331	185

* Data represented above has been extracted from the EToN system. The actual early start requests granted can be found in Section 6 KPI4 of this report.

8. Conclusions

Overall, Dorset Council considers the second year of Permit Scheme operation as a success. As part of this review, we have also identified key operational and performance measures to focus on for Year 3.

In the second year of operation, it is pleasing to see that the overall number of days occupation has reduced by 22.2%, whilst the number of works has been re-baselined for internal promoters. The average duration of works continues to be lower by 7.7% for external work promoters, from an average of 3.9 days to 3.6 days when compared with the baseline year. The second year of scheme operation also demonstrates improved coordination and information management between Dorset Council and all work promoters, with a small number of works being refused or deemed. Dorset Council has applied parity to all works as required by the scheme.

The fee income received in Year 2 has reflected the cost of operating the scheme was moderately higher than the estimated value. This is predominantly due to higher volumes of utility works and additional backlog works being undertaken by promoters after the Covid period. There is an intent to make further improvements on operating the scheme and embedding enhanced system support for optimisation of efforts in Year 3.

During second year of Permit Scheme operations, the quality of data supplied by all work promoters has significantly improved, resulting in high quality of information recorded in the Streetworks Register. Identification of gaps in the supplied data at an early stage of the permit application process has helped in improving data accuracy.

9. Recommendations

Based on the overall analysis of operating the Permit scheme in Year 2, the following recommendations have been made for Year 3.

Recommendation 01:

There has been an aggregate loss of £111,962 in the first 2 years or 7.8% of the total operating cost to process utility works promoter permits that were granted. It is recommended that a full review of costs and income is undertaken at the end of Year 3, once all operating costs and allowable overheads are known, with an appropriate adjustment to permit fees charged, if deemed necessary.

Recommendation 02:

The significant reduction in occupancy of the road network recorded in Year 1 has been slightly impacted due to a small increase in the average duration of utility works. This is a result of the almost two-fold increase in number of Major works and a 20% increase in Standard works, both generally longer duration works. Hence, it is recommended that the estimated durations submitted with permit applications in Year 3 to be monitored to avoid any further slippage in the stated scheme benefits.

Recommendation 03:

Review utility application permit conditions to see if all stated conditions are necessary and required, with an intent of reducing the amount of breach of conditions and infringements in Year 3.

Recommendation 04:

The number of highway works recorded in Year 2 has reduced again, following a reduction reported in Year 1. It is recommended that highway works undertaken in Year 3 be reviewed to ensure all works falling with the remit of the permit scheme have an appropriate permit.

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Date	Description	Recipient(s)	Action
17/02/2022	Review #1 – Draft Report	Saanchi	Internal
24/03/2022	Review #2 – Draft Report	Saanchi	Internal
14/03/2022	Review #3 – Draft Report	Dorset Council & Saanchi	Feedback
22/04/2022	Final Report	Saanchi	For Approval
25/04/2022	Approval	Dorset Council	For Publishing

11. Appendix

Infringements

During the Year 2 of operation, it was noted that at times work promoters failed to comply with approved ways of working under the permit scheme. For such instances Dorset's traffic team identified the deviations through system generated data or site-based inspections, captured evidence wherever necessary and have issued Fixed Penalty Notices (FPNs) to the work promoters. All works carried out by Dorset Council were also monitored and reported internally for parity, however FPNs were not raised.

FPNs are classified under below categories to help work promoters focus on specific reasons of non-compliance, and thereof take necessary action to reduce such occurrences in future.

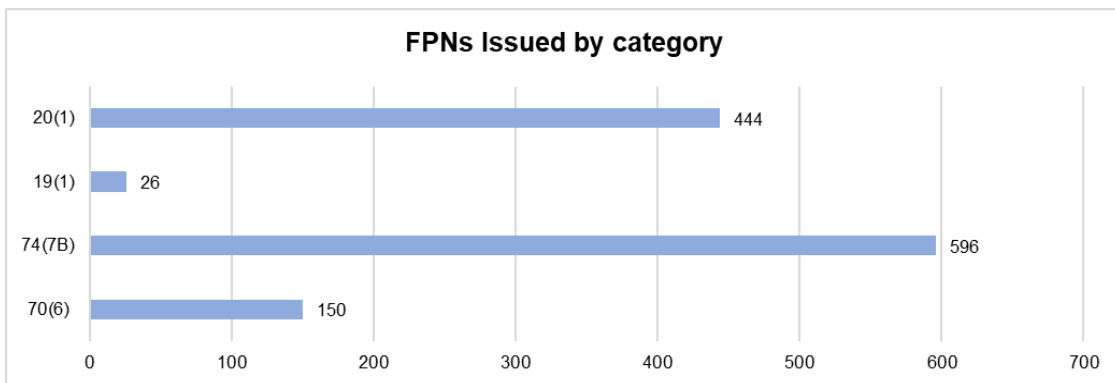
- s.70(6) - Failure to provide registration details (Partial or Full) of interim or permanent reinstatement within 10 working days from the date on which the reinstatement is completed.
- s.74(7B) - Failure to provide a notice of Actual start date, Revised duration or works clear/closed (Works Stop)
- Regulation 19 creates the criminal offence for an undertaker or someone acting on its behalf to undertake works without a valid permit.
- Regulation 20 creates the criminal offence for an undertaker or someone acting on its behalf to undertake works in breach of a condition.

Table 16: Infringements by promoters by categories

Promoter	70(6)	74(7B)	19(1)	20(1)	Total
BT	69	169	15	65	318
SCOTTISH AND SOUTHERN POWER	13	70		108	191
SOUTH WEST WATER	13	67		37	117
WESSEX WATER	15	226	4	72	317
Western Power Distribution	5	36	1	8	50
SOUTHERN GAS NETWORKS PLC	18	11	5	133	167
GIGACLEAR LIMITED		9	1		10
NWP STREET LTD		1			1
VIRGIN MEDIA		3			3
ENVIRONMENT AGENCY		2			2
NETWORK RAIL				2	2
Giganet Limited	10	1			11
Last Mile Asset Management	2				2

Promoter	70(6)	74(7B)	19(1)	20(1)	Total
Wessex Internet Limited				1	1
GAS TRANSPORTATION CO LTD	1			9	10
NATIONAL GRID ELECTRICITY				4	4
NEOSCORP LTD	3			5	8
Jurassic Fibre Limited	1	1			2
TOTAL	150	596	26	444	1216

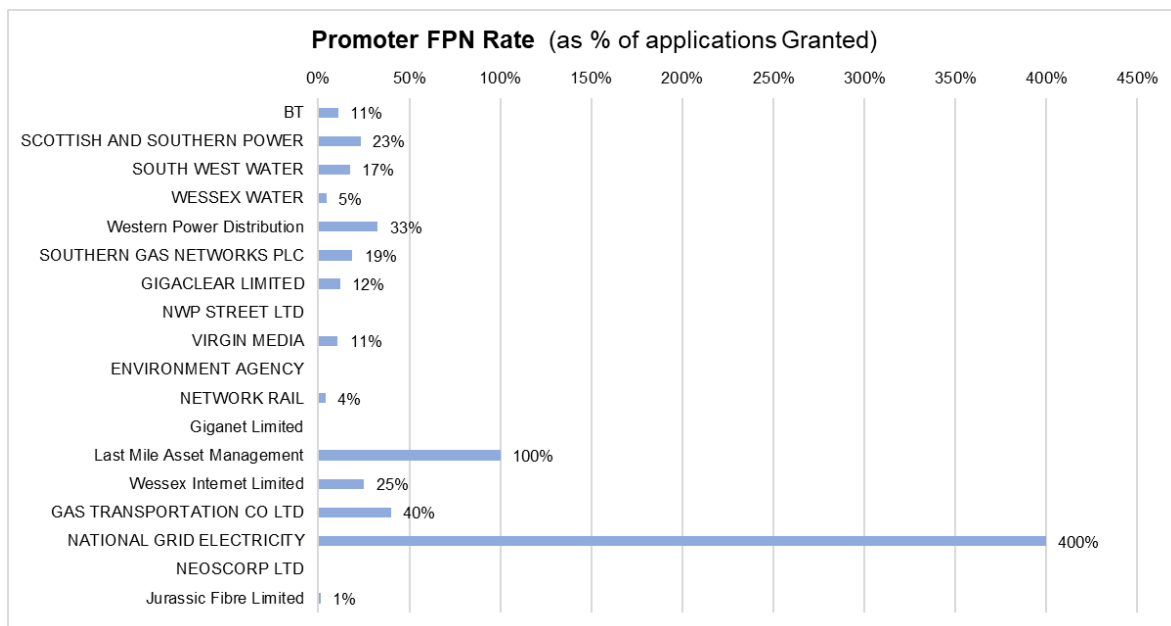
Figure 5: FPNs issued



The breach of permit conditions for works undertaken on Dorset’s network appears as the primary reason for infringements.

Additional details of infringements (%) by work promoters has been analysed against the granted permit and permit variations applications. This provides further insight into the areas of improvement in Year 2.

Figure 6: Promoter FPN Rate



Carbon Emission Analysis

Dorset Council monitors carbon emissions contributed by various factors across its network. Implementing the permit scheme has significantly reduced occupancy of roads by work promoters in Year 1 and Year 2. The total occupation of the highway in Year 2 was 52,400 days. This is 15,018 days less than the last year of noticing (2019) or a 22% reduction on the baseline figure. Hence, a high-level analysis was undertaken to estimate probable value adding benefits offered by implementing the permit scheme.

It has been verified through the Quadro modelling documentation and the calculation of fuel emissions, that costs are internal within the model. It only reports the cost of change in emissions; hence emissions could not be directly derived from the models. However, the WebTAG datebook provides the cost of carbon dioxide equivalent emissions as £52.30 per tonne of CO₂e at 2010 values.

The Cost Benefit Analysis modelling reported the total annual fuel emissions cost of delays and diversions due to roadworks across the network in the second year at £1.2M (2010 values) or 2.7% of the total modelled cost of works in Year 2 (£45.1M). Calculating backwards from the cost per tonne, would give 23,379 tonnes of carbon dioxide emitted through the works areas in Year 2.

The permit scheme has reduced average durations and therefore occupancy by around 22% when compared with the Noticing benchmark period. Therefore, the effective reduction of carbon dioxide emitted in Year 2 of the scheme can be stated as 5,143 tonnes of CO₂e saved.

This is approximately 75% higher than the emissions saved in Year 1 due to the net increase in the number of days worked in Year 2 (compared with Year 1) and the increase in the number of works operating with temporary traffic signal control or road closures (which will increase CO₂e emissions due to delays and/or increased travel distance along diversion routes).

Although no benchmark is available to verify how realistic the above approach is, the comparative analysis has been undertaken to compare impacts and benefits in each year.