

HAMPSHIRE'S HIGHWAYS UNDER MILITARY OCCUPATION

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ABSTRACT

Between 1939 and 1945, Hampshire became one vast military camp. It was vitally important that the county's roads and bridges were in good condition to allow the rapid and unimpeded movement of military convoys and emergency vehicles. This article, addressing a surprisingly little studied aspect of the history of the Second World War, examines the pivotal role played by the County Surveyor and his team in achieving this primary objective, despite shortages of men, materials and time, and puts their activities in context with the national situation and the many directives issued by or on behalf of the national government, which quickly exercised central control over local authorities. (N.B. Although discussed where appropriate, the focus of this study does not include the cities of Southampton and Portsmouth, which had their own highway engineers and were covered by a different set of records from those studied here. It should also be noted that the Isle of Wight is not covered by this study).

INTRODUCTION

On the whole, the roads meet the considerable demands placed on them by civilian traffic. The road network is not exemplary, but the roads are numerous and kept in good condition; there are excellent links between the ports and the main industrial areas, and much is done in maintaining the road network to ensure that it remains at its current level.

This assessment, made by German war planners (Wheeler 2007, 27) echoes a statement made by Hampshire's County Surveyor in 1938 (HRO H/CX1/31/17).

Not only have the numbers of vehicles using the roads increased enormously, but the average

weight and speed of the individual very considerably. That our roads are able to withstand the punishing usage of modern traffic is proof of the skill of our road engineers and of the excellence of the materials of construction in use today.

This latter claim was shortly to be put to the test. The quality of highway administration and the condition of the roads and bridges in Hampshire were to become vitally important to the British military authorities.

COUNTY HIGHWAY ADMINISTRATION

In 1939 Hampshire County Council (HCC) was responsible for more than 3,000 miles of maintained public highways and for more than 1,100 bridges. This responsibility was delegated to the County Surveyor (CS) who was answerable to the County Roads and Bridges Committee (CRBC), a powerful group of more than twenty county councillors. The effectiveness of his department in meeting the future demands of the military, as well as those of the public, depended largely on an effective administrative organisation and a highly skilled workforce.

To understand the departmental structure some explanation about the history of the county's highways administration is necessary (Savage 1957, 19–20). In 1920 the Road Traffic Act had created traffic commissioners directly responsible to the Minister of Transport. Roads were classified into Class I (main traffic arteries), Class II (traffic routes of less importance) and unclassified (relatively unimportant local roads) on which direct grants would be made to highway authorities. Under the Local Government Act 1929, Hampshire County

Table 1 Mileage responsibilities at the outbreak of war

<i>Class</i>	<i>County Roads maintained by direct control</i>	<i>County Roads delegated to Rural District Councils</i>	<i>County Roads maintained by Urban District Councils</i>	<i>Totals</i>
First (A roads)	390.66	40.13	430.79	861.58
Second (B roads)	249.94	34.56	284.5	569
Unclassified	202.2	2263.92	4.26	2470.38
Totals	842.8	2338.61	719.55	3900.96

Council was constituted the highway authority in the rural districts. It was empowered to delegate the maintenance of unclassified roads or county bridges or both of them to rural district councils (RDC) who previously had been responsible for their upkeep. Twenty-two RDCs applied for delegation of which seven were refused being, in the view of the county council, too small to undertake the work satisfactorily. A further review by the county authorities created eleven enlarged RDCs of which ten were granted delegation, Ringwood and Fordingbridge opting out. Table 1 shows that 73 per cent of the county's road mileage was therefore outside the direct control of the County Surveyor. Additionally the county council was responsible for 96 miles of Trunk roads; these roads of national importance were created under the 1936 Trunk Road Act: they were Treasury-funded and their maintenance was delegated to local authorities.

PREPARATIONS FOR WAR

Since before the First World War roads in the United Kingdom had suffered chronic under investment despite rapidly increasing volumes of road traffic. This was due to the powerful Parliamentary railway lobby who stifled any competition from road transport (Jeffreys 1949, 122). Any major road improvements occurred when Parliament decided that it was necessary to fund work in areas of high unemployment.

The condition of the county's bridges had been reviewed as required by Section 30 of

the Road and Rail Traffic Act, 1933. Colonel Hughes, the County Surveyor, had listed 270 weak or unsatisfactory bridges which needed strengthening, widening or reconstructing in his report to the County Roads and Bridges Committee on 23 April 1934. The Munich crisis again focused the attention of the Ministry of Transport on the condition of bridges of military importance for the movement of convoys. On 1 May 1939 Hughes showed the CRBC a map which he had received showing roads to be used for military purposes in the event of war and reported that a number of weak bridges were being strengthened, including the bridge at Breamore and the long arch rail bridge at Compton, and that a small number of roads needed to be widened.

Hampshire's roads were being improved during the late 1930s. Hughes had not only put in place annual maintenance programmes but had also been planning and surveying routes of bypasses to rid the county of some of its worst bottlenecks, especially on the long distance trunk roads. Four ran through the county and these were the A3, London-Portsmouth; A30, London-Penzance; A33, Basingstoke-Southampton; A34, Winchester-Preston. The Winchester bypass (A 33) was finally opened to all traffic on 1 February 1940 after the contractor who, confessing to a lack of skilled and semi-skilled men, had asked the county council to help finish the job; a request from the War Office in September 1939 had dedicated the one completed carriageway for the British Expeditionary Force convoys (HRO H/CX1/31/18).



Fig. 1 Brigadier Hughes (left) in charge of 145 Brigade, northern France 1939 – (IWM O 1164)

In June 1939 local authorities received a copy of the Air Raid Precautions (ARP) Circular 121 which covered the steps to be taken by them as 'Aids to movement' to assist traffic during the Blackout. These included painting white lines along road centres, marking kerbs, trees and bridges with black and white paint, screening illuminated direction signs and pedestrian crossings. This circular was the subject of discussion at the County Surveyors' Society (CSS) meeting held on 28 June when it was noted that 'Low Bridge' signs were also being erected to help drivers unfamiliar with the area. At their July meeting it was proposed that a meeting be held with the Ministry of Transport to recommend that various road markings at junctions and cross-roads were necessary to improve road safety during the Blackout. At the end of August, Hampshire's Chief Constable instructed the County Surveyor that all 'aids'

should be completed 'at all possible speed' (HRO H/CX1/31/18).

In the summer of 1939 road teams were busy on improvements in the north-east of the county where minor roads needed to be strengthened and widened. Mr H. H. Parkhurst, District Surveyor for Hartley Wintney, recorded urgent requests from the military authorities for upgraded lanes in the vicinity of Odiham aerodrome, Ewshot Camp, Cove and Hawley Camps (District Surveyor's Minute book for Hartley Wintney R.D.).

Highway authorities across the country were quickly reminded that the leisurely peacetime protocols had been set aside when they discovered that the Air Ministry simply prevented public access from highways or footpaths to sites of aerodromes under construction. In a reply, dated 30 December 1939, to a complaint from the County Councils Association the Air

Ministry explained that, to avoid giving information to the enemy, Orders under Defence Regulation 16 were not being made public. (HRO H/CX1/31/18)

The construction of aerodromes and military camps created labour shortages for the highway authority. This was to become a never-ending problem later on. As far back as 1937, the Hartley Wintney District Surveyor had told his council that he was experiencing considerable difficulties in recruiting and then retaining roadmen because the council was 'hopelessly outbid' for efficient able-bodied men. In June 1939, he again reported that there was an acute shortage of available labour; only half the usual number of temporary roadmen were available for resurfacing work due to demands for labour to build army camps. That this was a county wide problem is reflected in the CRBC minutes dated 26 June (HRO H/CX1/31/18). Hughes reported that government contracts for the erection of camps and other military constructions, where wages were much higher than those paid locally, were having a serious affect upon the labour market. Furthermore, skilled men had been lost when meeting the Ministry of Transport's request for the supply of men to the Royal Engineers for the creation of the 113th Road Construction Company.

On 3 September the Ministry of Transport directed county councils to review and prioritize their current road programmes. New road improvements were to be deferred unless such work was necessary for war purposes but essential maintenance of roads and bridges and current works should be completed. Mr J. S. Hall, created acting County Surveyor when Brigadier Hughes had volunteered for Territorial Army service (Fig. 1), went to Whitehall to discuss with Ministry of Transport officials a list of works which covered fourteen double sheets of foolscap. Priorities were agreed. These also included the gradual reduction in the standard of maintenance on all classes of road and an instruction that only work required for war purposes and essential road maintenance for traffic safety would be permitted. Hall warned the CRBC that although the trunk and classified road bridges were in a sound condition, those bridges on unclassified (rural) roads

carrying increased traffic, resulting from the development of camps and training centres, might become structurally dangerous or beyond economic repair.

A traffic census of August 1939 indicates the growing use of these roads by military traffic in certain sectors of the county (Table 2).

The census also recorded an increase of a third in traffic in the Netley Common/Hamble area which was attributed to the petroleum depots at Hamble and also considerable activity with building work at aircraft factories.

PREPARATIONS FOR AN INVASION AFTER A HARD WINTER

Hall's primary duty was to ensure the unhindered flow of traffic on Hampshire's roads, especially those which formed military routes; this duty included the selection of alternative routes if damage occurred to roads and bridges until they were repaired. It had been assumed by the government that the outbreak of war would be followed by a German bombing offensive, with the probable use of poison gas (Mowat 1956, 615). Local authorities, funded by block grants from the ARP vote, were encouraged to create pools of repair material for roads and bridges and to ensure that they had sufficient fully trained road repair and decontamination teams available. When the call for 'preparedness by 6pm on 1 September' was received from the county ARP officer, Hampshire had squads identified and available in Alton, Andover, Basingstoke, Bishop's Waltham, Copythorne, Ringwood, Ropley, Totton and Winchester. The continuous manning of depots was gradually replaced by a more cost effective 'call out' scheme which became operational on 11 December.

Although no bomb damage occurred until later, the severe winter of 1939/40 created huge problems on the county's roads. Exceptionally severe frosts set in towards the end of December and continued, except for a few isolated days, until the middle of February. Temperatures of 10 degrees of frost (i.e. 22°F = -5.6°C) were recorded between 21 December and 23 January with a peak of 19 degrees of frost on 17 February (i.e. 13°F = -10.6°C)

Table 2 Extract from the results of triennial traffic census on B roads between 14 and 20 August 1939 held at 75 census points in the county (Source: CS Annual Report 1939/40)

<i>Road</i>	<i>Name of road</i>	<i>Traffic count 1936</i>	<i>Traffic count 1939</i>	<i>% increase</i>
B 3055	Beaulieu-Hinton Admiral	3,586	9,728	+171.4
B 3014	Farnborough-Fleet station	2,3728	4,1600	+75.5
B 3054	Hythe-Lymington	4,957	8,578	+73.1
B 3056	Lyndhurst-Beaulieu	4,587	7,695	+67.8
B 3002	Hindhead-Bordon station	7,926	1,2285	+55.1
B 2131	Ramsnest Common-Greatham	3,087	4,460	+44.5

(HRO HPUB/SY2/1/37). These weather conditions caused considerable damage to those classified and unclassified roads in the vicinity of government works in the Andover, Romsey, and Stockbridge districts. Roads laid on chalk subsoils and those constructed of waterbound gravel or limestone were badly affected. If heavy traffic had been kept off these roads whilst frosts had been thawing out,² roads would not have suffered so badly but the War Department did agree to pay the full amount of £13,825, claimed by the county for repairing damaged roads. Further compensation of £9,257 was claimed from the Admiralty and Air Ministry (HRO HPUB/SY2/1/37). In the financial year which ended on 31 March 1941 nearly 57 miles of unclassified roads and 16 miles of Class A and B roads were reconstructed and resurfaced. It was during this winter that a CSS meeting was held which featured much discussion about the costs of road-making; concern was expressed about the Government's reluctance to allow ordinary labour costs to rank for an ARP grant and that, on unclassified roads, the cost of road work might only be eligible for grant aid on 'selected' ones.

As well as repairing roads, the roadmen had been busy gritting the main highways and, when necessary, were aided by military personnel to clear snow from the isolated rural lanes serving anti-aircraft and searchlight establishments. When the winter had passed, district surveyors across the county were sending out teams to ensure that property owners removed

damaged branches which overhung roads and cut back hedges which restricted the sight-lines of military traffic (District Surveyor's Minute book for Hartley Wintney). Later in the year, the Wartime Agricultural Committees were pressing the highway authorities to remove noxious weeds, such as ragwort, from their verges so that they did not seed on adjoining fields.

The nature of work changed swiftly after May 1940. Any non-essential highway work ceased when the remnants of the British army were evacuated from Dunkirk. Hampshire became one of the coastal counties threatened with invasion and the county council, as with other counties, received urgent requests to assist the military in preparing anti-invasion measures. These included road and anti-tank blocks in Southampton and Portsmouth as well as other parts of the county, particularly in the north-east where General Ironside's GHQ Defence Line was being constructed (Denton 2009, 1–24; Osborne 2004, 47, 276). At their May 1940 meeting the CSS minuted the importance of the examination of bridges at strategic points and for road staff to be vigilant for signs of suspicious characters and sabotage (WSRO Add. Ms. 9505 CSS 1/9). Many makeshift barriers of moveable drums filled with bitumen, later with concrete, were constructed as well as those created by the erection of taut wires across the lanes of bypasses and dual carriageways to prevent use as landing strips (Figs 2 & 3). In June



Fig. 2 Home Guard placing concrete anti-tank cylinders – note metal sockets in carriage way into which metal rails are being inserted (IWM H 15192)



Fig. 3 Aerial obstructions across carriageway (June 1940) (IWM H 2067)

instructions were received from the Ministry of Transport for the removal of all direction signs, milestones, and advance traffic warning signs and these were stored in various council depots (HRO HPUB/SY2/1/38).

When, on 17 July, General Sir Alan Brooke, a Hartley Wintney man, replaced General Ironside as Commander in Chief Home Forces he immediately set about creating a more flexible defence system. He wanted swift offence with mobile reserves, near the coast, able to strike back at the enemy wherever he landed and before he had time to consolidate. To do this, Brooke needed roads and bridges unimpeded by road blocks, which had caused so much trouble in France (Bryant 1959, 198) so that Hampshire's workers spent much time removing or re-siting them. Where road blocks were retained, roadmen drilled holes deep into the carriageway to position metal sockets into which metal rails could be inserted should the enemy approach (Fig. 2). A total of 280 roadblocks were constructed by council staff and materials were supplied for the construction of others by military personnel. Council workers were also engaged, with the army, on highly confidential work in the preparation of bridges and their approaches for demolition. Further help to the military was provided by the council's asphalt plants which manufactured thousands of tons of concrete blocks, together with accessories for handling and tying them into road barriers.³ As well as these defence works, the County Surveyor's staff were busy constructing anti-aircraft sites and widening entrances to requisitioned properties whose drives also needed to be strengthened and surfaced.

Apart from these many and varied activities during the day, work teams had to be ready to respond to emergencies during the night. After a phone call from Hants County Control, county council road staff were sent to the aid of Southampton where much bomb damage had occurred on the night of 30 November (HRO H/CX1/31/18); squads were sent out from Basingstoke, Winchester and the Micheldever asphalt plant and these stayed until midday on 2 December. It was during this period that calls were made to provide shrapnel and weather-proof shelters for road gangs, but the lack of

them continued for some time due to lack of suitable materials (HRO H/CX1/31/18).

Shortages of manpower continued. At the beginning of 1941, Hall's staff, including those employed by the rural districts, had shrunk from 1,777 in August 1939 to 1,165 of whom 279 were of military age and liable for call-up. In the previous year the CRBC had been told that the 113 Road Construction Company was now on active service but the Minister of Labour wanted to recruit a further number of General Construction Companies to work overseas. The county had been asked to assist in the formation of another company – six officers and sixty seven other ranks had been supplied from the employees of local authorities and from contractors. Unfortunately for Hall, workers in local government services were ranked of secondary importance, below those in the primary group which covered engineering, aircraft, ship building, munitions, oil, metal goods manufacture; therefore his staff were liable for transfer at any time (Hancock & Gowing, 1949, 174). Furthermore his staff could be called on to assist those farmers who applied for help to district and divisional surveyors. The CRBC were informed monthly about the worsening manpower situation, which was causing considerable delays in meeting even the requirements of a reduced road maintenance programme, which was also affected by shortages of road materials and by the urgent and unceasing demands from the military.

A TIME OF ENDURANCE AND REORGANISATION

From January 1941 until late 1943, the County Surveyor's staff continued their attempts to balance the needs for normal road maintenance, such as surface dressing which prolonged the life of the road surface for several years, with the demands of war. During 1941 and 1942 the county experienced an intensive bombing campaign. The road repair squads were praised by Hall for their excellent work in keeping road communications open during air-raids over the county and their cooperation with the police had added to the

efficiency of traffic control, especially where roads were closed due to the nearby presence of unexploded bombs (Appendix 1). From the time a call was received from County Control, manned night and day by HQ staff, men from the depot concerned would be on site within an hour and no important classified roads were closed for more than twelve hours unless there was a reasonable alternative route. The teams had to deal with bomb craters which varied from 2 ft. (61 cm) in diameter and 6 inches (15.2 cm) deep to those which were 60 ft. (18m) across and 25 ft. (7.6m) deep.

An already heavy workload was made worse by the increasing frequency of damage to roads, especially narrow rural lanes, and bridges by lorries hauling heavy loads for the construction of army camps and aerodromes; considerable numbers of military convoys also contributed to the damage to the county's road system. CS office staff, which included temporary female clerks, spent many hours completing claims for compensation against the three Service Departments, namely the War Office, the Admiralty and the Air Ministry. By the end of March 1941 claims of £30,419 for damage to twenty miles of unclassified roads had been submitted. Additional clerical work was caused by the need to issue licences for a growing number of essential materials (HRO H/CX1/31/18).

Another major contributor to the department's work was that of trench reinstatement. The Post Office Engineering Department installed many miles of new cabling to military and national undertakings all over the county and new sewers, water and electricity mains for Service Departments, as well as for rural properties occupied by families and businesses evacuated into the countryside. Additionally, farms needed an increase in water supplies to their land which was now being used far more intensively than before the war. To ensure minimum disruption to movement of military traffic it was vital that trenches were filled in as quickly as possible and over 790 of these, 88 per cent of the total, were reinstated with asphalt surfaces by the council's workforce in the year to March 1941. The rest, with gravel surfaces, were made good by the utility companies.

To ease the council's manpower shortage situation, various alternatives were tried. Much

of the work repairing drives, preparing parking places for military vehicles and similar work was transferred to the Pioneer Corps, supervised by skilled council staff. Following a suggestion by the Ministry of Transport, the County Surveyor at the beginning of 1941 recommended that women be recruited for light road duties, partly taking over the role of absent lengthmen as had been done in the First World War.⁴ Hartley Wintney District Council had recruited two women during April, one of whom had worked as a volunteer for many months doing roadside trimming. By the end of May, ten women had been employed by the county and it was reported that they were working well. Their numbers had grown to a dozen by the end of September 1941 and were employed on a variety of jobs, such as roadside trimming, general painting, 'Aids to Movement' activities and working with the surface-dressing gangs (HRO H/CX1/31/18; County Surveyor's Report 16.6.41).

The employment of female workers was, however, only a temporary boost to the manpower resources because the department was fighting a losing battle to retain men who were attracted elsewhere by better paid jobs. During April and May eighteen men had given notice but, after persuasion, eleven men stayed on. The spring of 1941 saw the beginning of the big national 'plough up' campaign and by May 106 men, between the ages of 35 and 40, had registered as agricultural workers of whom 68 were employed on farms near their homes. Finally after councils across the country had made many representations both to the Ministry of Labour and the Ministry of War Transport 'to safeguard the proper maintenance of highways', a letter was issued by the Ministry of Labour on 29 May. This stated that all roadmen aged 35 and over would be considered to be engaged on work of national importance and would not be allowed to change their employment, unless they had previous experience in shipbuilding and marine engineering (HRO H/CX1/31/18; County Surveyor's Report 16.6.41). However, due to delays in publishing the necessary Order, men who were younger than 42 continued to leave the county council. Hall told the CRBC on 6 October that the Ministry of Labour either did not have the



Fig. 4 Reorganisation of county divisions (based on J. S. Hall (28/01/1941))

necessary control or were unwilling to exercise it, with the result that a further sixteen men had left to work elsewhere.

The CS also investigated ways for greater efficiency. In wartime the delegation of unclassified road maintenance to rural district councils had proved an uneconomic use of scarce resources. It also prevented the fast transfer of men to where they were urgently required. Earlier in July 1941 the county council had resolved to take back, as from 1 April 1942, these delegated highway functions for lanes which were being used increasingly by military traffic and construction vehicles. The proposal was not accepted by eight RDCs who appealed

to the Ministry of War Transport. The Ministry's Inspector found in favour of the county council on the grounds of greater efficiency in use of manpower, economies of increasingly expensive materials which had to be allocated across different RDCs, reduced waste and the more efficient use of plant (County Surveyor's Annual Report 1941/42). Most importantly, this judgment gave the county council greater flexibility and control over the use of its resources. Furthermore the reorganisation which occurred on 1 April 1942 achieved a saving of twenty per cent on staff and almost fourteen per cent on operating costs. (Fig.4)

During 1941 and continuing through 1942,

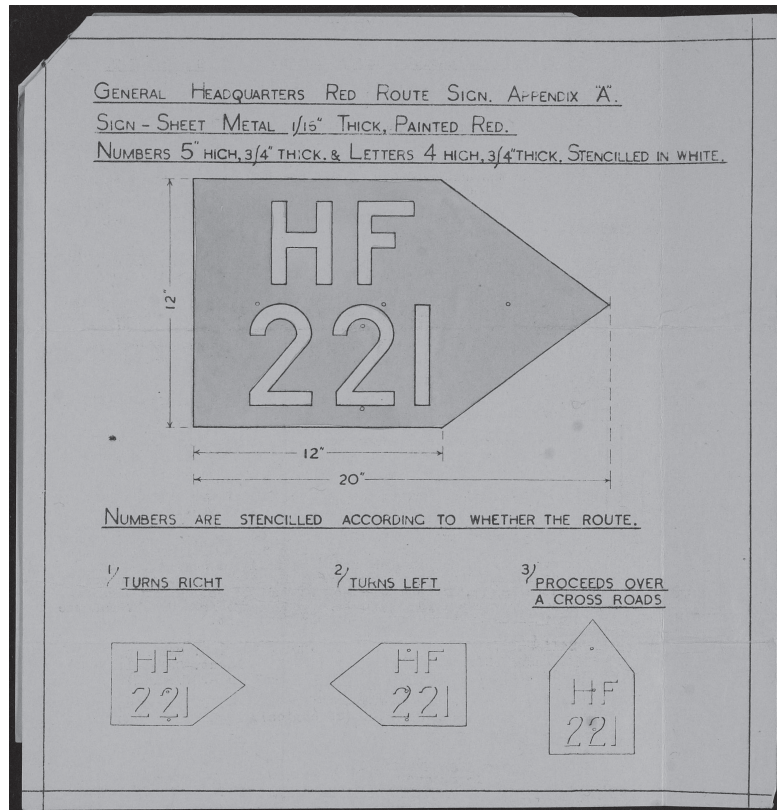


Fig. 5 Military 'Essential traffic route' sign 1942 (HRO W/C21/3/1/6)

there was a national problem of a huge shortage of fit men for the expanding armed services which frequently occupied the attention of Churchill's Cabinet. They had hoped that the building and civil engineering industries would be a rich source of such men. However the entry of the Americans into the war in December 1941 had severely restricted this potential supply because thousands of these men would be needed to build the airfields, the army camps and their attendant roads. At the height of airfield construction in 1942, a new airfield was opened every three days and Hampshire saw a lot of this activity especially in the New Forest where the following airfields were built: Sway (opened 1940), Holmsley South and Ibsley (1941), Beaulieu and Stoney Cross (1942), followed in 1943 by Advanced Landing Grounds (temporary airfields) at

Bisterne, Needs Ore Point and Winkton (1943) and finally Lymington (1944). (Davies 1992, 6)

Thus, Hall's manpower problems continued. By the end of 1941 overall numbers of Hampshire's road workers⁵ had decreased from 1,165 at the beginning of the year to 1,036 of whom 126 were of military call-up age, and 22 were women. A further blow was suffered when the upper limit for military service was increased from 41 years to 50 in March 1942 (HRO H/CX1/31/18; County Surveyor's Report 5.1.42). This at once increased the proportion of staff liable to join the armed forces to 36 per cent of the total. The leaking away of the pool of skilled men from the council's workforce was finally settled when it was agreed that the District Manpower Board in Southampton would deal with future questions of manpower and the enlistment of men.

The CS, in his October report, stressed that the large volume of work, much involving several miles of new road, made it imperative that his department's labour strength was maintained and it had become necessary to concentrate men from several divisions on works urgently required for both defensive and offensive operations. A significant contributor to the road teams' work in the summer of 1941 was caused by the War Department's decision to redeploy searchlights more effectively. In Hampshire: up to sixty sites manned by 35 Searchlight Regiment were involved. Many of these required work by the highway authority.

An indication of the extent of militarisation of the county's road system is shown by the survival of a military letter, classified 'Secret', dated 31 January 1942 (HRO W/C21/3/1/6). Titled 'Essential Traffic Routes', it referred to maps sent out to 5 Corps and 8 Corps and related to red routes to be marked with directional signs and suggested that, where labour was available in county boroughs and larger towns, co-operation could be expected from the surveyors for the highway authorities. As most civilian road signs had been removed, these military ones were a very visible reminder of who controlled the highways (Fig. 5).

Problems relating to the military use of minor roads continued. The CSS at their March 1942 meeting had a considerable discussion about the way in which work had commenced on factory and aerodrome sites and the use by its traffic of unsuitable roads which became 'founderous' before anything could be done by the road teams to improve them. It was agreed that a small deputation visit the Chief Engineer of the Ministry of War Transport (MoWT). Later minutes recorded that all Service Departments would, in future, inform the MoWT of works likely to affect public highways (WSRO Add. Ms. 9505 CSS 1/9). The pressure on the county's rural network was also growing because of the increase in local bus services ferrying workers to and from factories which had been relocated or constructed in the countryside away from the main industrial areas liable to be bombed (Savage 1957, 320). Further use of local public transport was due to the bussing of troops from their camps to local market towns and villages for entertainment at dance halls, cinemas and

pubs. The intensive air raids on Southampton and Portsmouth had led to the wide dispersal of the civilian population and, according to a letter from the Regional Transport Commissioner to the MoWT: 'Special services for workpeople and others over distances of 15 miles or more have taken the place of the penny or twopenny bus or tram ride.' (Savage 1957, 330).

Pressures on district surveyors increased. The seizure of Malaya by the Japanese had stopped the import of rubber and, although the life of a tyre had been reduced by sixteen per cent as a war time economy since the beginning of the war, it became essential to prolong the lives of tyres by improving road surfaces. Half-tracked vehicles, which while saving on tyres were heavy on road wear, appeared in greater numbers. As well as essential road maintenance, repair work on bridges damaged by military vehicles significantly added to the daily workload and was a test of the skills of the workforce. Badly decayed timber bridges had to be extensively repaired: in the New Forest at Puttles on the Rhinefield road and at Millyford on the Lyndhurst to Fritham road as well as the bridge spanning the river Test in Mill Lane, Romsey (County Surveyor's Annual Report 1942/43). Hall, in his annual report for 1942/43, praised the bridge repair work which had been performed exclusively by the council's staff, who had received intensive initial training and close supervision by the engineering staff; he added that both the quality and costs of the work had been very satisfactory (County Surveyor's Annual Report 1942/43). Other activities included the installation of traffic lights in seven places including the A33/A333 junction at Hockley on the Winchester bypass and the re-erection of 213 30-mph speed limit signs; this work had been prompted by a circular, dated 31 October 1942, from the Ministry of War Transport intended to reduce the number of traffic accidents.

In 1942 road maintenance continued, despite a wet summer when over 15,000 working hours were lost due to work undertaken at a reduced level in bad weather.⁶ Table 3 give a clear indication of the severity of the cutbacks.

The weight and volume of traffic on the

Table 3 Expenditure per mile costs 1938–43, taking into account the increasing costs of materials, haulage and wages

<i>Financial year</i>	<i>Expenditure per mile</i>
1938/39	£546
1939/40	£354
1940/41	£231
1942/43	£261

county's roads were about to increase due to Operation 'Bolero', the build-up of US forces in Britain.

PREPARATIONS FOR D-DAY

1943 started badly. Hall's hard pressed crews were given additional work when a severe gale and heavy rainfall on the night of 30/31 January brought down three hundred trees across public highways and flooding of roads occurred in many districts. The worst of this was at Headley where Ludshott Common was used as a tank training ground (HRO H/CX1/31/18; County Surveyor's Report 24.3.1943).

It was during 1943 whilst intense preparations were being made to accommodate Britain's American allies, their enormous construction equipment and war materials, that Germany started its 'tip and run' tactics, using small groups of fast, low flying fighter-bombers on 'soft' poorly defended coastal towns and cathedral cities (Collier 1957). The civilian population, which included council staff working on the roads, had to be constantly alert for these sudden attacks by aircrews who were known to machine gun men, women and children using the streets. Although no records of casualties amongst road crews could be found in this study, it can hardly pass without comment that stress levels increased.

The impact of Operation 'Bolero' on the county's road network was considerable and continued for many months. A serious problem occurred in 1943 which had not been foreseen

by the government, who had been persuaded before the war that the railways had ample capacity to transport both goods, raw materials, military personnel and civilians. However the capture of the coastal ports across the Channel and the need to use the Atlantic ports of Bristol and Liverpool to berth American merchant and troop ships, as well as need to move coal by rail instead of by sea-going collier, severely tested the capacity of the privately-owned rail services. The culmination of the strain came in the nine months before D-Day (Hancock & Gowing 1949, 480; Savage 1957, 44, 604). The Government, now in control of the whole inland transport system, eased petrol rationing so that Hampshire's road network experienced a surge of commercial road haulage vehicles. HCC, like other county councils, had been unable to continue its programme of bypass construction and this resulted in bottlenecks and clogged roads as heavy loads were moved towards Southampton (Savage 1957, 600, 604).

Damage to roads and bridges continued. The county's minor roads, constructed to carry only light traffic, received further punishment from large concentrations of armoured military vehicles and it was found to be almost impossible to repair these rapidly deteriorating roads because of their continuous use by heavy traffic. Extensive damage was also caused to the parapet and wing walls of bridges; it was reported in May that over fifty bridges had been repaired by council staff during a three month period (HRO H/CX1/31/18 – ref. to meeting of 17.5.43). In an all-out effort to speed repair work the War Department announced that these and other road repairs could be made without prior inspection by their compensation assessors, the previous system being totally at variance with the urgent need to maintain the flow of military traffic.

The ageing of Hall's workforce was emphasized in his report to the CRBC, given on 2 January 1943; this analysis is reproduced in Table 4.

By October of the same year, 20 per cent of his workforce were aged over 65. Men were frequently drafted to other divisions other than their own, frequently leaving home at 6.30 am and returning after 6.30 pm when a

Table 4 Age analysis of road workers employed by Hampshire County Council

<i>Age range</i>	<i>Number of workers</i>	<i>Totals</i>
Under 20	8	
20–29	10	
30–39	73	
40–49	237	
50–51	61	389 (39 %) of military age
52–59	268	
60–69	287	
over 70	43	598 (61 %) too old for military service

considerable number took up Home Guard and Fire Watching duties but, despite all the demands made on them, morale was reported good (HRO H/CX1/31/18). It was during 1943 that the construction of cement caissons, used for Mulberry harbours needed for the invasion of France, commenced at various sites in the county. Not only did this add to the wear and tear of the roads leading to the various construction sites, but the provision of accommodation, high rates of pay and guaranteed overtime meant that it was impossible to recruit road workers (Polley 1994, 43).

In the spring of 1943 the CS, to counteract the shortage of labour, introduced the use of 1,000-gallon tar sprayers which treated five times more road surface than was possible with the use of hand sprayers, and employed 1/8th-inch to dust-sized tar- or bitumen-coated granite for surfacing. These materials were in plentiful supply and, although cheap, preserved existing road surfaces, prevented skidding and prolonged their use by heavy traffic until after the war (HRO H/CX1/31/18; County Surveyor's Report 7.6.43). By October, having had favourable summer weather, Hall was able to claim that 95 per cent of the general maintenance work had been completed, despite further damage caused by tanks and other tracked vehicles participating in large scale army exercises such as 'Spartan' in March and 'Harlequin' in September.

Help from an unexpected quarter, showing the priority which road transport was now being given, came to the aid of the divisional surveyors. At the end of the year the CRBC were informed that the department now received coded transmissions of weather forecasts from the Meteorological Office at the Air Ministry and this allowed divisional surveyors to prepare for snow, thaw, ice and frost (HRO H/CX1/31/18; County Surveyor's Report 17.1.44).

On 31 December 1943, Mr J. S. Hall, having reached retirement age and probably exhausted after more than four years of very demanding work, managing a very busy department, left Hampshire County Council. Brigadier 'Archie' Hughes, released from military duties, returned as county surveyor in November and was to make full use of his extensive military background and administrative skills in the months before D-Day.

Although plans were being made during 1943 for the invasion of France, no final decisions about the date and the areas for troop landings were made until the Tehran Conference in December 1943 (Bryant 1959, 96). During the planning for the invasion of France the Ministry of War Transport was responsible the maintenance of roads and bridges to be used by military traffic. Liaison officers were attached to the Divisional Road Engineers teams and operated the Ministry's Road Repair Organi-



Fig. 6 Pill-box demolition to widen the Southampton – Hythe road (30/4/1944) (IWM H 38318)

sation through personnel directly employed by the MoWT, through county surveyors and their divisional surveyors and through city and borough engineers (Kohan 1952, 220). Records show that there was also very close liaison between the HCC divisional surveyors, their teams and the military in the run up to D-Day (HRO H/CX1/31/8; W/C21/3/1/4; County Surveyor's Report 2.10.44 and Appendices 2 and 3).

Highway work related to the invasion was varied and had to meet rigid deadlines. The construction of 'hards' from which the invasion forces would be launched not only included the embarkation points but also the roads leading up to them. Where new roads had to be constructed they had to be of concrete either 6 or 8 inches (15.2 or 20.3 cm) thick and reinforced depending of the properties of the sub-soil (Kohan 1952, 275). In December 1943, Hughes received instructions to carry out road improvements west of Winchester. On Boxing Day he received a further list of work urgently required,

which had to be completed by 31 March, and contracts were swiftly awarded to Messrs. W Rees Ltd.: for widening the A 272 Winchester to Petersfield Road and for stretches of the A 32 between the crossroads at West Meon Hut and Droxford (HRO H/CX1/31/18; County Surveyor's Report 2.10.44). At a still later date orders were received for a very large volume of work in the New Forest and in the Hambledon area. This work, which had to be finished by 1 May but whose deadline was later extended to 15 May, was divided between four contractors – Reed & Mallik, Ltd; W. & C. French Ltd; Tarmac Ltd; and Osman & Co. Ltd (HRO H/CX1/31/18; County Surveyor's Report 2.10.44). Whilst a certain amount of work for the War Department was done in the north of the county, the major part was concentrated in the south, bounded on the north by the A 30 Salisbury to Stockbridge road, and the A 272 Stockbridge to Petersfield road.

The urgency of the situation and the necessity to acquire considerable areas of



Fig. 7 Widening a section of the Southampton – Hythe road (1/5/1944) (IWM H 38319)

land (Appendix 2) required careful organisation and much help was given by the County Land Officer and his staff. The vast majority of landowners were very helpful and in only a few cases was it necessary for the county council to employ their special powers to enter land after seven days' notice. Front gardens and farm hedges and fields were cut back and re-fenced, businesses had their frontages reduced, mature trees were felled and even houses were demolished to ensure the unimpeded flow of military convoys (HRO H/CX1/31/18; County Surveyor's Report 2.10.44 – sealed appendix). Road widening, junction improvements and bridge strengthening (Figs 6, 7 & 8) were essential preparations for the movement of men and equipment to their Marshalling areas which were located within short distances from the Embarkation hards at Portsmouth and Gosport (Area A), Southampton (Area C), and Lepe

and Lymington (Area B). More headroom had to be provided on a number of bridges. The work necessary before D-Day can be summarised as follows:

- 59 miles of road widened to 22 feet (for two-way traffic)
- 17 miles of road widened to 16 feet (for one-way traffic)
- 16 bridges widened or strengthened
- 337 passing places or laybys (for breakdowns) constructed
- 118 road junctions or sharp bends reconstructed in concrete or asphalt for tracked vehicles

The entire workforce and two asphalt plants from the department's six southern divisions as well as men from other divisions outside the marshalling areas were employed in this work.



Fig. 8 Replacement reinforced concrete bridge on Brockenhurst – Beaulieu road (1/5/1944) (IWM H 38320)

There were insufficient senior staff to supervise these extensive contracts and other authorities lent eighteen engineers for the duration of the works. When the contractors' accounts came to be settled, it was found that errors made and extras claimed were 'surprisingly small' (HRO HPUB/SY2/1/30). Over half a million pounds was spent on these operations (Appendix 4). At a later date, Hughes commented that it had been unfortunate that he had not received an earlier warning about the routes because surveys and preparatory work would have avoided a number of future road problems; bad bends would have been removed, road widening on one side had placed the highest point of the camber in the wrong place and corners could have been superelevated (i.e. banked).

It was during the preparations for D-Day that the county's highways received their worst punishment. In the north of the county the

road system was standing up to the abnormal military traffic but in the south a number of roads, particularly the rural lanes, were facing total collapse from the intensive training of troops and their tracked vehicles during the previous winter. Some idea of the weight of this traffic may be gained from Table 5.

On 27 March 1944 Hughes concluded his report to the CRBC with the statement 'It is probable that no other county in the country will suffer so much as the southern part of Hampshire. . . . the Committee should raise the whole question of Hampshire with regard to the reinstatement of its roads after the war.' (HRO H/CX1/31/18) Not only were road foundations being damaged but also verges and footways where convoys were parking at the roadside during breaks. This issue was the subject at the CSS meeting held on 13 April. A Home Forces General Order had instructed

Table 5 Statistics of three of the tanks used during the invasion of France

<i>Vehicle</i>	<i>weight</i>	<i>width</i>	<i>height</i>	<i>top speed</i>
Sherman	31.7 tons	2.6m (8ft 6in)	2.7m (9ft)	25 mph
Churchill Mk VII	40 tons	2.7m (9ft)	3.5m (11ft 4in)	13 mph
Cromwell	26 tons	2.9m (9ft 7in)	2.5m (8ft 2in)	32 mph

officers in charge of convoys to pull off the roads at rest periods in order to obtain camouflage effects from the shadows of roadside fences and hedgerows and to facilitate the flow of other traffic. Unfortunately this practice was damaging footpaths, surface water drainage and telephone cables, as well as rutting road verges and causing subsoil damage to the carriageways (WSRO Add. Ms. 9505 CSS 1/9). A further cause of damage to the sides and verges of roads was attributed to US Army vehicles because, with their left-hand drive, these were driven closer to the edge of the road than was normal (HRO HPUB/SY2/1/30).

Between January and June, Hughes and his team were in daily communication with the Royal Engineers and the MoWT Southern Division office at Exeter to ensure that road improvements requested were monitored and prioritised (Dagleish 1945, 74). During February and March the County Surveyor received 'Most Secret and Urgent' instructions from the Divisional Road Engineer concerning the provision of guide lines on the approach roads to the hards. The work of painting central white lines on roads had to be completed by 31 March. Again in March he received instructions the MoWT for the immediate re-installation of all direction posts and other aids to drivers (HRO H/CX1/31/18; County Surveyor's Report 27.3.44). The Divisional Road Engineer issued a 'Most Secret' circular 43/64 on 25 March to various highway authorities concerning liaison between civil and military authorities (HRO W/C21/3/1/4). He set out the responsibilities for maintenance and emergency repair of public roads which included the newly constructed widenings and passing places and requested that road repair gangs operated a 24 hour emergency service.

On 1 April the security of the invasion force

was strengthened when the Protected Areas Order No.10, which imposed a coastal ban extending ten miles inland, came into force. This caused problems for the council's road teams some of whose members, living outside but working inside the ten mile zone, needed special passes (HRO W/C21/3/1). Problems of heightened security continued to affect the road gangs. A circular dated 16 May 1944, from the Divisional Road Engineer and addressed to certain highway authorities, concerned the issue of maintenance and emergency repair of roads and bridges (HRO W/C21/3/1/6 SD 44/15). To avoid delays the military authorities had agreed a procedure by which the foreman or ganger in charge would carry a Certificate of Occupation which listed the workmen in the gang, their destination and the task to be performed. A temporary pass would be issued at the checkpoint to the foreman, which was surrendered on return in exchange for the Certificate of Occupation. It was therefore essential that each member of the gang carried his National Registration Identity Card (HRO W/C21/3/1).

The wear and tear on the county's roads accelerated as slow moving transports carried thousands of cases of glider parts, parts for Mulberry harbours and other indivisible loads – too large for rail transport – towards the South Coast. Additionally, whilst troop trains ferried thousands of men and equipment to detaining stations, the final journey of men to their various rural, wooded, camp sites had to be made by road. For example, Shawford station was used for troops based in Hursley Park and Bushfield Camp, south of Winchester and Droxford for camps at Grenville Hall, Hambledon, Horndean, Soberton Heath and Wickham (Ford 1994, 48–9).

As D-Day approached, convoys from the

training camps converged towards the Marshalling Areas, especially from sites in West Sussex. An eyewitness account from Midhurst recalled an armoured division passing through the narrow streets, marking the corners of buildings and scouring the road surfaces as the tracked vehicles changed direction; gangs of road workers were on hand to shovel material back into the holes created. Delays on the eve of embarkation could not be tolerated (Dalglish 1945, 47). On D-Day none of the invasion ships were delayed because soldiers, weapons and stores had not reached the ports on time (Hancock & Gowing 1949, 490). Brigadier Hughes and his teams had successfully fulfilled their major role of keeping the lines of communication open. Two complimentary letters are recorded in the minutes of the CRBC. One, from the MoWT to the Chairman of HCC, is reproduced below (the other appears in Appendix 5).

Berkeley Square House
W. 1

20 July 1944

C. L. Chute, Esq., MC

Dear Chairman,

The part which your county surveyor and his staff have played in the road widening operations demanded by the recent emergency conditions has been brought to my notice.

This work has been done in a manner which reflects the greatest credit upon the council's road administrative machine and I shall be glad if you will convey to your county surveyor, Brigadier A. C. Hughes, C.B.E. B.Sc., my personal thanks for the way in which he has co-operated with my Department and the expeditious way in which the work on the large mileage of roads involved was completed before the scheduled date. Their efforts were a real and necessary contribution to the success of the recent operation.

Yours sincerely, Leathers. [i.e. Lord Leathers,
Minister of War Transport]

GRADUAL REDUCTION IN MILITARY ACTIVITY

After 6 June, military convoys of reserve troops and equipment continued to flow towards the

coastal ports, Southampton being increasingly used because of the benefit of having four daily high tides and because the expected enemy air raids failed to occur. This traffic continued unabated until French Channel ports had been captured and supplies could be shipped from other British ports (Wilson 1994, p. 102). Despite the fine summer weather the divisional surveyors were unable to proceed with much of their planned resurfacing work due to the constant use of designated roads by the military, and their suppliers and could only stand and watch as their roads deteriorated. Not only had the roads suffered but long stretches of footways had either been extensively damaged or removed to provide parking places for military vehicles.

However, the manpower shortage situation had improved slightly by this stage, with the use of prisoners-of-war. In February 1944 the MoWT had notified local authorities that, subject to certain conditions, Italian Prisoners of War (PoWs) could be used on the county's roads but, for security reasons, this did not happen until after D-Day. Three PoW camps, one near Romsey, one near Stratfield Mortimer and the other at Mellow Down were the source of this additional labour which could be used within a 25-mile radius from its base. Parties of up to twelve men could be used without a military escort, misconduct and unsatisfactory work being reported to the appropriate camp commandant. The first Italians started road work in the county on 8 August and by the end of the year a total of 37 were employed,⁷ but the type and quality of work was somewhat variable; the main causes were that some prisoners were unaccustomed to manual labour and many were reported to be 'non-collaborators' i.e. insubordinate or lazy (HRO H/CX1/3/1/18; County Surveyor's Report 17.1.45). In July 1945, after the end of the war in Europe, sixty German PoWs(8) joined the County Surveyor's workforce which, it was reported, had lost 60 per cent of its original strength since the outbreak of war: 59 had died, 144 had transferred to agriculture, 324 had enlisted in the Forces and 548 had either left the council for other work or retired (HRO H/CX1/3/1/18; County Surveyor's Report 17.1.45). Hughes's problem was that many of these losses were

skilled roadworkers whom he was unable to replace and many of the remainder were nearing or over retirement age.

In March 1945, Hughes obtained detailed situation reports from his divisional surveyors which he summarised for use at the CRBC meeting on 6 April. This summary (reproduced in Appendix 6) confirmed his prediction that the most serious road damage would occur in the south of the county, the worst being in the New Forest and Ringwood divisions. He concluded with a general comment about the increasing frequency of pot-holes and the department's inability to keep abreast of repair work due to the lack of skilled labour.

Additional tasks were to be completed following instructions received in the autumn of 1944. The Ministry of War Roads Dept. (South Division) issued a circular on 18 October 1944 (HRO H/CX1/31/18; County Surveyor's Report SD No. 44/35), which instructed the county surveyors that defence works, such as road blocks, anti-tank blocks, overhead obstructions could be removed when labour became available; bridges and roads which had been prepared for demolition or cratering could be reinstated and parapets, removed from bridges, restored. The removal of Hampshire's defence installations resulted in a heavy demolition workload, much of it contracted out, which was to continue into 1946 and 1947 (County Surveyor's Annual Report 1946 & 1947).

During October 1944, the MoWT asked Hughes to carry out trials of the American Barber Greene asphalt-laying machine, which spread, levelled and tamped material on to the road surface, thereby eliminating a considerable amount of manual labour. Trials began on 27 November 1944 on a section of the A 272 at Winchester Hill, Stockbridge. After teething problems, it was proved that the machine was capable of handling 300 tons a day and these machines, obtained under the Lend-Lease scheme, produced a much swifter repair of Hampshire's damaged highways than would have otherwise been possible (HRO H/CX1/31/18; County Surveyor's Report 2.10.44). Beside the Barber Greene machines, other technical improvements flowed from airfield construction, when the Americans had shipped over machinery for earth moving, soil

stabilisation and for the mechanical laying of concrete (Kohan 1952, 280). These productivity aids were, however, only a partial compensation for the shortage of skilled labour which reduced the number of roads teams available for post-war road reconstruction. In March 1947, the strength of the CS workforce of road workers was still only 72% of the number at the outbreak of war (County Surveyor's Annual Report 1947).

Problems associated with the military continued. Prior to the D-Day invasion the War Office had asked permission to use the Winchester bypass as a parking space for tanks but, in fact, workshops of a permanent character had appeared alongside and, in some cases, over it and instead of one carriageway both were being used (HRO H/CX1/31/18; County Surveyor's Report 2.10.44). A meeting, attended by Hughes, was held at the War Office on 28 February 1945. The attendees were informed that some £30,000 had been spent on workshops, hutments and camp equipment, and the senior officers who had been party to the agreement were serving in France and unavailable for questioning. A decision was reached that the War Office would restrict their activities to one lane only and a fence would be erected on the central reservation to keep the tanks away from the other carriageway, which would be completely repaired.

A BENEFICIAL LEGACY

Despite the problems caused by wartime wear and tear, road users are still reaping the benefits from the era of military occupation. In many parts of southern Hampshire minor roads that served as convoy routes to and from military camps are noticeably different from surrounding lanes. Improved sight lines at road junctions,⁹ broader and straighter country lanes (Fig. 9) are evidence of pre-invasion work; these old convoy routes often feature mature trees on one side but not on the other, where the hedge-line was changed. Even in 2009 it was still possible to see laybys, some now used as bus-stops, constructed for broken down vehicles prior to the invasion; examples of these lie beside the southern edge



Fig. 9 Brook Lane (C 200), Hambledon – widened for troop movements to and from camp at Grenville Copse. Now used for motorists travelling between Clanfield and the A32 (Photograph, M Walford)

of A 3090 (formerly the A 31) between Hursley and Romsey, a convoy route between Shawford Station and the camp at Ampfield.

CONCLUSION

This article set out to demonstrate how rapidly and completely the military dominated Hampshire's road system. The three Service Departments determined, through the MoWT, which roads and bridges would be used for military purposes and, therefore to a considerable extent, where most of the CS's resources would be used. The military authorities realized the importance of minimizing the interference with the daily business of civilians and the convoy routes selected, after discussion with the police and the HCC, avoided centres of population as much as possible. Traffic control posts, manned by the Military Police, ensured separation of military and unauthorised civilian

traffic. However, the maintenance of civilian routes was still expected by civilians, albeit at a reduced level.

The other purpose of this article was to publicize the remarkable achievement of the County Surveyor's department during the war years and to demonstrate how, with an ageing, undermanned workforce and worn out plant,¹⁰ it was still able to meet its primary objective of keeping lines of communication open, despite damage from bombs and the unprecedented volumes and weight of traffic. The skilled road teams, working outside in all weathers and never knowing when an air attack would occur, had a thankless task for no sooner had one length of road been repaired than more damage would occur further along the stretch. The achievements of the county surveyor's department during the early war years have to be viewed within the context of limitations imposed by the government's policy of appeasement. This had 'robbed war planning discussions of reality

and marred the implementation of conclusions reached' (Collier 1957, 424) because additional funds and resources were not made available to county councils. Furthermore, the insistence of the government to distinguish between 'normal', or peacetime costs, and 'emergency', or wartime ones, significantly increased the clerical workload of headquarters staff in Winchester. The control and issue of licences for essential materials also created much extra work. The onset of wartime conditions immediately highlighted the weakness of the leisurely methods previously employed during peacetime; a system of slow committee rule, of red tape, of endless letter-writing between London, regional headquarters, and the periphery frustrated the quick implementation of decisions reached. Lord Aston, writing to the regional commissioner in May 1941, stated that 'elderly, inefficient and obstructive aldermen, councillors and local officers should be invited to make way for younger men.' (Titmuss 1950, 317)

The county surveyor's problems were compounded by the loss of eighty-three younger but experienced headquarters and divisional staff who served in the armed forces. Best use was made of available manpower and materials. It was clearly impossible to compete with higher wages offered by commercial contractors, who employed many workers from 'neutral' Ireland; agricultural demands ensured that many women joined the Land Army or Timber Corps or found work in factories involved in war work. It might have been possible for Hughes and his over-stretched team to do more with less labour, had Britain followed the example of the United States, where large and efficient road building machinery was developed for the construction of inter-state highways, instead of using road building in the early 1920s and early 1930s as a method of reducing massive unemployment when investment in expensive plant was to be avoided (Jeffreys 1949, 111, 148). Hampshire highway engineers could only look with envy at the heavy earth-moving and grading equipment brought over by the US airfield construction units. Hughes in his first post-war report commented that the history of road making machinery in Britain was almost a tragic one; 'a hundred and one machines

made by a hundred and one firms with varying characteristics and most of them with their own particular faults and tendencies.' (County Surveyor's Annual Report 1945/46)

The war years were a setback to the pre-war improvement of the county's road network. The growth of traffic and of road accidents in the 1930s had forced the government to release funds for the improvement of roads between ports, industrial centres and urban areas. War halted this progress. Military occupation had tested the structure and the engineering of Hampshire's roads on an unprecedented scale and, in the main, the A and B class roads stood up remarkably well. Hampshire's highway engineers used their wartime experience of tanks to develop and provide hard-wearing tank crossings after the war (HRO H/SY/B7/2/2). Hughes could never have anticipated the intensive military use of unclassified roads when they were surveyed in 1934; his twelve-year rolling maintenance and improvement programme of these was based on the knowledge of his district surveyors at the time and was only four years old at the outbreak of war. In 1961 the author of Hughes's obituary fittingly wrote 'it was no small tribute to his professional skill that the roads of Hampshire came through the test of heavy war-time traffic and reduced maintenance in a condition that compared more than favourably with other parts.' (Hampshire Chronicle 3 June 1961)

Were Hampshire's war-time road problems worse than those of other counties? The answer is outside the scope of this article, and indeed, little work seems to have been undertaken elsewhere. It is hoped that, through the detailed study of the history of Hampshire's roads during the Second World War, a baseline may be provided, against which future researchers in other counties may make a comparison.

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APPENDIX 1: Hampshire highways damaged by enemy action

	1940/1	1941/2	1942/3	1943/4	1944/5	Totals
Roads damaged/ closed	70	14	7	1	2	94
Roads damaged not closed	46	9	6	3	1	65
Roads closed due to Unexploded Bombs (UXBs)	26	28	8	4	2	68
TOTALS	142*	51**	21	8	5	227

* Between 19 June 1940 and 31 March 1941

** Between 1 April and 20 September 1941

Source: County Surveyor's Annual Reports

Due to self-censorship the details of the location of roads damaged were omitted from the official reports but the County Surveyor offered the information to members of the County Roads and Bridges Committee if they wanted to see them. However a few extracts from surviving Air Raid Precautions (ARP) 'Hants Control Incident Charts' provide detailed accounts:

* Sheet 27 No 2 – 19.8.1940 – time 23.28 – 2 UXBs blocking A343 main road, Andover to Newbury, about 2/3 mile N of railway bridge . 20. 8.1940 – time 13.47 – road block cleared.

* Sheet 97 18.11.1940 – time 11.13 – Petersfield district – Clanfield – 2 UXBs – one on edge of A3, one 150 ft W of road at "Hogs Lodge" – traffic diverted and road closed [reopening not reported].

* Sheet 118 No 15 – 21.11.1940 – Petersfield district – Froxfield – time 20.58 – several

HE [High Explosive] and I/Bs [Incendiary Bombs] fell and exploded near Barnett Side Farm – road from Alton to Colemore blocked by large crater 200yds north of junction with Alton road (nr "White Horse" inn). County Surveyor informed. 22.11.1940 time 15.47 – road now open.

* Sheet 160 No.4 – 23.12.1940 – Kingsclere district – Kingsclere – time 23.15 – 2 HE at Great Knowl hill, 1 mile NE of Kingsclere. 1 man killed. House and buildings badly damaged. Road B3051 completely blocked, traffic diverted, phone lines down.

* Sheet 179 No.11 – 20.1.1941 – time 10.25 – Basingstoke district – Upper Nately – 1 UXB near main road Upper Nately to Greywell – traffic stopped.

* Sheet 193 No.5 – 1.3.1941 – time 22.45 – Droxford district – Bishops Waltham – at

least 5 HE along B 3035 – 2 HE at Droxford – road partially blocked – reported to County Surveyor 0828 on 2nd.

* Sheet 201 No.3 – 11.3.1941 – time 03.19 – Droxford district – Southwick – 1 HE fell and exploded opposite Pidgeon House Farm – crater 20ft by 8 ft – road totally impassable – Portsmouth police stopping traffic from Portsmouth end. Southwick constable erecting barrier on Southwick side.

* Sheet 262 No.5 – 19.4.1941 – time 22.31 – Petersfield district – Bolinge hill – 6 HE on junction of A3 and Bolinge hill – road A3 blocked – 3 craters found. 23.31 – A3 only partially blocked, traffic can pass – shovel gang collect by surveyor to remove debris. date 20.3. – 11.25 – A3 cleared of debris – open to normal traffic – County Surveyor informed at 12.52.

APPENDIX 2: Land acquired for road improvements prior to D-Day

<i>Road</i>	<i>Location</i>	<i>Owner</i>	<i>Gift (G)/price</i>	<i>Description</i>	<i>CRBC meeting minuting date</i>	<i>Remarks</i>
A 27	East Wellow	W. A. Brandon	£2	poultry run (0.007 acre – 65 ft frontage)	27.3.1944	For War Dept – Area C
A 27	Chilworth, passing place	J. Willis-Fleming	G	arable (0.010 acre)	17.7.1944	Co. Surveyor instructions 29.3.44
A 27	Chilworth	J. Willis-Fleming	G	arable	2.10.1944	
A 32	West Meon/Droxford (Corhampton)	Mrs C. Wyndham-Long	£125	arable, pasture, plantation, pond, swamp	17. 7.1944	
A 32/C165	Junction, Warnford	R. Chester	G	waste	2.10.1944	For War Dept – Area A
A 32	West Meon/Droxford (Droxford)	J. P. Chrystal, HHC	G	arable	2.10.1944	For War Dept – Area A
A 32	West Meon/Droxford (Corhampton)	Hambledon Hunt Club	G	garden of detached cottage	2.10.1944	For War Dept – Area A
A 32	West Meon/Droxford (Exton)	F. T. Cleall	G	part of building plot	2.10.1944	For War Dept – Area A
A 32	West Meon/Droxford (Meonstoke)	F. Annereah	£30.10s	tennis court	2.10.1944	For War Dept – Area A
A 32	West Meon/Droxford (Exton)	Mrs Seward	£17.10s	part of building plot	2.10.1944	For War Dept – Area A
A 32	West Meon/Droxford (Warnford)	R. P. Chester	G	woodlands and water-cress beds	4.12.1944	For War Dept – Area A
A 32	West Meon/Droxford (Meonstoke)	J. Jacobs	£23.10s	arable	4.12.1944	For War Dept – Area A
A 32	West Meon/Droxford (Meonstoke)	Mrs G. Soloman	£10.5s	building land	4.12.1944	For War Dept – Area A

<i>Road</i>	<i>Location</i>	<i>Owner</i>	<i>Gift (G)/price</i>	<i>Description</i>	<i>CRBC meeting minuting date</i>	<i>Remarks</i>
A 32	West Meon/ Droxford (Meonstoke)	L. Percy & Son	£18	draw in to petrol pump, access, garden	4.12.1944	For War Dept – Area A
A 32	West Meon/ Droxford (Corhampton)	Mrs E. Reeves	£3	building land used as a car dump	4.12.1944	For War Dept – Area A
A 32	West Meon/ Droxford (West Meon)	Mr & Mrs C. Foster	G	part garden, part draw in to petrol station	8.1.1945	For War Dept – Area A
A 32	West Meon/ Droxford (West Meon)	R. G. Tulley	G	part of garden of 'Windmere Cottage'	8.1.1945	For War Dept – Area A
A 32	West Meon/ Droxford (West Meon)	J. Percy	G	part frontage of bungalows 'The Haven' and 'Southcote'	8.1.1945	For War Dept – Area A
A 32	West Meon/ Droxford (Droxford)	J. Silvester	£45	water meadow	12.3.1945	For War Dept – Area A
A 32	West Meon/ Droxford (West Meon)	Messrs. Howell	£75	pasture, front garden of 'Brooklands Farm'	11.6.1945	For War Dept – Area A
A 32	West Meon/ Droxford (Meonstoke)	H. O. Smith	£5	part of building plot	11.6.1945	For War Dept – Area A
A 33	Improvement at junctn. Poles Lane, Otterbourne	L. Poole Warren	£5	building land	4.12.1944	C S Instruction 17.1.44
A 272	Winchester/ Peters- field road	Col. E. Kewley	G	embankment	22.5.1944	
A 272	Northwood	Col. E. Kewley	G	embankment	12.6.1944	
A 272	Winchester/ Peters- field (Bramdean)	Major V. R. Tahoudrin	£75	grounds of residence 'The Old Rectory' (0.024 ac)	12.6.1944	
A 272	Winchester/ Petersfield	Lord Royden	G	arable	2.10.1944	For War Dept – Area A
A 272	Winchester/ Peters- field (Cheriton)	Rev. L. Corbett	G	arable, pasture, gardens of 6 cottages	2.10.1944	For War Dept – Area A
A 272	Winchester/ Petersfield	Lt. Col. H. Nicholson	G	pasture, copse	2.10.1944	For War Dept – Area A
A 272	Winchester/ Peters- field (Cheriton)	Tichborne Estate	£40	arable, copse	2.10.1944	For War Dept – Area A
A 272	Winchester/ Petersfield (Hinton Ampner)	R. S. Dutton	£24.12s	arable, pasture	2.10.1944	For War Dept – Area A
A 272	Winchester/ Petersfield	M. de Carte	£5	pasture	2.10.1944	For War Dept – Area A
A 272	Winchester/ Peters- field (Cheriton)	C. E. Freeman	£50	arable, pasture, access to bungalow	2.10.1944	For War Dept – Area A

<i>Road</i>	<i>Location</i>	<i>Owner</i>	<i>Gift (G)/price</i>	<i>Description</i>	<i>CRBC meeting minuting date</i>	<i>Remarks</i>
A 272	Winchester/ Peters- field (Cheriton)	E. Cousens	£6	uncultivated land	2.10.1944	For War Dept – Area A
A 272	Winchester/ Peters- field (West Meon)	Mrs D. G. Duncan	£10	pasture (0.187 ac.)	2.10.1944	For War Dept – Area A
A 272	Winchester/ Peters- field (West Meon)	C. G. Warr	£25	frontage of petrol station 'The Garage'	2.10.1944	
A 272	Winchester/ Peters- field (Bramdean)	Capt. Tudor Owen	£30	pasture, garden of 2 pairs of cottages	2.10.1944	For War Dept – Area A
A 272	Winchester/ Peters- field (Bramdean)	Major S. Black	£15	pasture (0.115 ac.)	2.10.1944	For War Dept – Area A
A 272	Winchester/ Petersfield	R. L. Wynn-Williams	£486.10.6d [#]	frontage of detached house 'Langrish Cottage'	2.10.1944	For War Dept – Area A
A 272	Winchester/ Petersfield	A. W. Philpott	£16	part of garden	2.10.1944	For War Dept – Area A
A 272	Winchester/ Peters- field (Cheriton)	Mrs A E Slater	£37	part of gardens to four cottages	2.10.1944	For War Dept – Area A
A 272	Winchester/ Petersfield	G. Berry	G	part of garden of cottage	4.12.1944	
A 272	Winchester/ Petersfield	Earl Fitzwilliam	G	arable	4.12.1944	
A 272	Junct. of Bailey Green, Privett	E. Talbot-Ponsonby	G	pasture	4.12.1944	
A 272	Winchester/ Peters- field (Privett/ Langrish)	Lt. Col. O. Nicholson	£50	arable, copse	4.12.1944	
A 272	Winchester/ Peters- field (Langrish)	P. Cooper	£5	rough pasture	4.12.1944	
A 272	Winchester/ Peters- field (Bramdean)	G. G. Griffin	£30	pasture, part of gdn. to bungalow 'Kalamunda'	4.12.1944	
A 272	Winchester/ Peters- field (Bramdean)	N. Dowling	£27.10s	pasture – Manor Farm (0.191 ac.)	4.12.1944	
A 272	Winchester/ Petersfield	Mrs Long	£35	paddock	12.3.1945	
A 272	Winchester/ Petersfield	J. Peeling	£10	pasture	12.3.1945	
A 272	Winchester/ Peters- field (Cheriton)	R. E. Hartcup	£30.10s	arable, copse	12.3.1945	
A 272	Northwood Park/ Stockbridge	J. Craig-Harvey	G	agric. land (1,700ft frontage; 0.555 ac.)	12.3.1945	For War Dept – Area A
A 272	Stockbridge	R. G. Waldy	G	frontage of guest house	8.1.1945	
A 325	Improvement to entrance to Budds La. Bordon	War Dept.	G	open land	4.12.1944	
A 337	Gosport Lane, Lyndhurst	Hants & Dorset	G	frontage of garage	2.10.1944	
A 337	Gosport Lane, Lyndhurst	W. Hill	£10	part of front garden; 4 ft depth 'Normanton'	2.10.1944	

<i>Road</i>	<i>Location</i>	<i>Owner</i>	<i>Gift (G)/price</i>	<i>Description</i>	<i>CRBC meeting minuting date</i>	<i>Remarks</i>
A 337	Gosport Lane, Lyndhurst	T. S. Cheeseman	£10	part of front garden; 2 ft depth 'Cornerways'	2.10.1944	
A 337	Gosport Lane, Lyndhurst	Mr Beck	£20	part of front gdn.; 4 ft depth, semi 'Louvain'	2.10.1944	
A 337	Gosport Lane, Lyndhurst	Mrs Reeves/ Whitcher	£20	part of front gdn.; 4 ft depth, semi 'Fern Glen'	2.10.1944	
A 337	Gosport Lane, Lyndhurst	Miss Hillier	£25	part of front gdn.; semi-detached 'South View'	2.10.1944	
A 337	Gosport Lane, Lyndhurst	Mrs E. Prince	£15	frontage of detached house; 4 ft depth taken	2.10.1944	
A 337	Gosport Lane, Lyndhurst	Brig. Gen. E. Powell	£40	pasture, plantation, yard; 10 ft depth taken	16.4.1945	
A 337	Batthamsley/ Brockenhurst	Spicer & Ray	£20	arable	12.3.1945	
A 338	Salisbury St, Fordingbridge	H. Willetts	G	part of forecourt of shop	2.10.1944	
A 3057	Steepleton	Col. E. Kewley	G	agric. land	27.3.1944	
A 3057	Steepleton	Col. E. Kewley	G	agric. land	12.6.1944	
A 3057	King's Somborne	C. B. Morgan	G	agric. land	27.3.1944	
A 3057	King's Somborne	C. B. Morgan	G	agric. land	12.6.1944	
A 3057	Nos 1, 3, 5 Cherville St. Romsey	T. Chandler	£225	three cottages at south end of street	4.12.1944	
B 2149	Improvement at Staunton Arms to Emsworth	J.H. & F.W. Green Ltd	G	woodland (75 sq. yds)	22.5.1944	C S instructions 29.3.44
B 2149	Nr Staunton Arms	J.H. & F.W. Green Ltd	G	woodland	12.6.1944	
B 3002	Lindford Bridge, Bordon	Public Trustee	£175	accommodation land	17.7.1944	
B 3004*	Wilsom Farm, Alton/ Kingsley road	T. & C. Chalcroft	G	pasture	2.10.1944	
B 3053	Hounsdown/ Hill Head	G. Grimstead	£15	part of front garden of 2 semi-det. houses	2.10.1944	
B 3053	Hounsdown/ Hill Head	Mrs E. Prince	£5	part of gdns. of two semi-detached houses	2.10.1944	
B 3053	Hounsdown/ Hill Head	Mrs E. Bailey	£26	pasture	4.12.1944	
B 3053	Hounsdown/ Hill Head	Mrs Marshall	£15	part of garden of cottage	12.3.1945	
B 3053	Hounsdown/ Hill Head	F. P. Curtis	£10	part frontage of dwelling house	3.12.1945	

<i>Road</i>	<i>Location</i>	<i>Owner</i>	<i>Gift (G)/price</i>	<i>Description</i>	<i>CRBC meeting minuting date</i>	<i>Remarks</i>
B 3054	Lymington Pier Station/ Hatchet Pond	F. Stanes	£5	part of grounds of house	2.10.1944	
B 3054	Lymington Pier Station/ Hatchet Pond	W. G. Brown	£15	part of garden of house	2.10.1944	
B 3054	Gosport Street, Lymington	F. L. Phillips	£250	pair of cottages, Nos 22 & 24	2.10.1944	C S Instructions 7. 3.44
B 3054/ C 134	Lymington P. Stn/ Hatchet Pond	G. Duplessis	£25	arable	4.12.1944	
C 42/ C54	Road junc. Bulling- ton/ Barton Stacey	Mrs D. M. French	G	agric. land	4.12.1944	
C 67	Standon-Merton	Sir G. Cooper	£12	pasture and copse (0.38 acre – frontage 1420 ft)	27.3.1944	For War Dept – Area C
C 69	Hittingbury X road, H. Hatley Chandlers Ford		G	building land	2.10.1944	
C 95	Rownhams	F. Stone	£7.10s	part of frontage of village shop	27.3.1944	
C 95	Rownhams	Execs. of W. Miller	£5	part of front garden of house	17.7.1944	
C 132	Hatchet Pond to Rollestone	A. Petty	£5	rough pasture	4.12.1944	
C 132	Hill Top/ Rollestone	G. Biddlecombe	£5	rough pasture	16.4.1945	
C 132	Hill Top/ Rollestone	R. Patrick	£12.10	pasture, fir trees	16.4.1945	
C 133	Exbury/ Lepe	Capt. E. de Rothschild	G	agric. land (6ft depth 210 ft frontage)	12.6.1944	
C 133	Exbury/ Lepe	Capt. E. de Rothschild	G	pasture (6 ft depth 450 ft frontage)	2.10.1944	
C 134	Lymington Pier/ Hatchet Pond	Walhampton Estates	£320	cottage gdns, woodland, arable, pasture (3500ft frontage)	8.1.1945	C S Instruction 7. 3.44
C 134	Cripple Lane, East Boldre	Mrs Gosling	£35	pasture	12.3.1945	
C 135 & C 144	Boldre	Keppel Pulteney	G	site of demolished cottage	2.10.1944	
C 160	Layby at Morestead Down	Miss E. Best	G	downland	2.10.1944	
C 166	Upham street	W. Page	G	bank	12.6.1944	
C 168	Boorley Green/ Curdridge	B. Bignell	£21	pasture, copse (0.15 ac.)	2.10.1944	For War Dept. – Area A
C 168	Boorley Green/ Curdridge	R. J. Carpenter	£28	pasture , grounds of house 'Westfields' (0.21 ac.)	2.10.1944	

<i>Road</i>	<i>Location</i>	<i>Owner</i>	<i>Gift (G)/price</i>	<i>Description</i>	<i>CRBC meeting minuting date</i>	<i>Remarks</i>
C 169/ C187/C 188	Southwick/ Denmead and Staple Cross / Fareham	The Southwick Estates	£75	arable, pasture, woodland	12.3.1945	
C 187	'Hog's Lodge 'Clanfield/'Bat & Ball'	Mrs N. Coles	£5	part of front garden of house 'Woodcroft'	2.10.1944	For War Dept. – Area A
C 187	'Hog's Lodge' Clanfield/'Bat & Ball'	G. Terry	£5	pasture	2.10.1944	For War Dept. – Area A
C 187	'Hog's Lodge' Clanfield/'Bat & Ball'	Countess Peel	£50	arable, pasture, underwood	4.12.1944	For War Dept. – Area A
C 187	Hambledon	St. Mary College, G Win.		arable	12.3.1945	
C 187	Staple Cross/ Fareham	Hon. Mrs Bruce	£20	arable (0.373 ac.)	2.10.1944	
C 187	Staple Cross/ Fareham	H. Cole	£ 6.10s	arable (0.124 ac.)	2.10.1944	
C 188	Day Lane, Lovedean	W. Bucksey	G	agric. land	27.3.1944	
C 188	Day Lane, Lovedean	Mrs R. Whalley-Tooker	G	arable (50 sq. yds)	22.5.1944	C S Instructions 7. 3.44
C 188	Day Lane, Lovedean	W. Bucksey	G	agric. land	12.6.1944	
C 188	Day Lane, Lovedean	Mrs R. Whalley -Tooker	G	arable	12.6.1944	
C 191	Draw in at Soberton	F. L. Matthews	£1	pasture	4.12.1944	
C 195/ C 205	Cross roads	Earl Fitzwilliam	G	agric. land	4.12.1944	
C 200	Brooks Lane, Hambledon	J. Cooper	G	arable, pasture (1800 ft frontage, 0.225 ac.)	2.10.1944	
C 200	Brooks Lane, Hambledon	W. B. Mason	£40	arable, pasture (2260 ft frontage, .092 ac.)	8.1.1945	
C 200	Brooks Lane, Hambledon	Lady Taylor	G	Arable (2475 ft frontage)	14.5.1945	
Various ⁺	New Forest	Forestry Commission	?	forest (7.365 ac./ 293000 sq. ft)	?	C S Instructions 10. 2.44 For War Dept. – Area B

[#] Owner to carry out re-instatement.

^{*} During 1939 the B3004 Liphook to Lindford road had been extended for 6.71 miles by upgrading Caker's Lane, Green Street and Forge Road between Alton and Sleaford, thereby giving better military access to Bordon camp.

⁺ Roadside strips and verges taken for D- Day widenings on A 35, A 337, B 3053, B 3054, B 3055, B 3056, B 3078, B 3079, C 39, C 132, C 133, C 134, C 135 and C 145.

Sources: HRO H/CX1/31/18 and H/ES 3/7-3/11

APPENDIX 3: Bridges on roads carrying invasion traffic requiring modification

1) Strengthened

(a) West Meon (South) Bridge No. 511A, carrying A 32, just north of West Meon School.

(b) Titchfield Iron Bridge No. 429, spanning the River Meon just east of Titchfield Brewery on B 3334.

(c) Brockenhurst Mill Bridge No. 369, on Beaulieu / Brockenhurst road (B 3055) one mile north east of Brockenhurst station.

2) Widened and strengthened

(d) Dunbridge No. 181 carrying B 3084 across the River Dun, a little to the north of Dunbridge level crossing.

(e) Brockenhurst Mill Bridge, No. 370, spanning the Lymington river on B 3055, one mile north east of Brockenhurst station. (See IWM photo of work in progress – Spring 1944.[Source: County Surveyor's Annual Report 1944/45 – HRO ref HPUB/SY2/1/30])

(3) Widened

(f) Ashurst bridge, No. 357, carrying C1 Ashurst Bridge road and spanning Bartley Water, between Hounsdown and Netley Marsh.

(g) Matley Bridge, No. 394, situated on B 3056, Lyndhurst / Beaulieu road, 2 miles east of Lyndhurst.

(h) (j) (k) Meonstoke Bridge, No. 481; Exton White Arch Bridge , No. 469; and Warnford Bridge, No. 507, all on A 32 between Meonstoke and Warnford.

(l) Crockford Bridge, No. 379, one mile northeast of Bull Hill on B 3054 Hythe/ Lymington Road.

(4) Lowered

(m) The road, B 3055, under Whitley Railway Bridge and situated half a mile from Balmer Lawn Hotel was lowered by the council's contractors with the consent of the Railway Company.

APPENDIX 4: Transcription of estimates of costs of modifications to highways and bridges for D-Day invasion traffic

Schedule III – Widening and strengthening of highways and bridges for Invasion traffic

<i>Road</i>	<i>Description</i>	<i>Est. cost £</i>
A3	Chalton Road to Snells Corner, Horndean	5,541
C187	“Hog’s Lodge” to “Bat & Ball” PH, Hambledon	7,520
C187	Staple Cross to Fareham	13,988
C188	Anmore Dell, Denmead	1,184
C188	Southwick to Bunkers Hill, Denmead	20,780
C195	Bunkers Hill – Inhams Lane – Denmead School	2,750
C145	A337 to B3055, Latchmoor (nr Brockenhurst)	3,136
C145 & B3055	Balmer Lawn to Hatchet Pond	33,804
C140	Chapel Lane, Hounsdown	1,673
B3053	Hounsdown to Hythe [old B3053 route via Marchwood]	41,133
B3054	Hatchet Pond to Hill Top	16,299
C134 & B3054	Lymington Pier Station to Hatchet Pond	21,643
C134, C135 & C39	Hatchet Pond – Cripple Lane -Bunkers Hill, Beaulieu	14,735
A337	Gosport Lane, Lyndhurst – Brockenhurst – Battramsley	18,471

<i>Road</i>	<i>Description</i>	<i>Est. cost £</i>
A337	Lyndhurst to Brockenhurst	6,456
A31	"White Hart Inn" to Merryweather Farm, Poulner (Ringwood)	805
C132	Rollstone X-roads towards Fawley	3,726
C132	Hill Top to Rollstone	17,007
C133	Exbury to Lepe	10,969
C133	Hilltop to Exbury	6,089
A272	Sussex County boundary to Sheet	2,360
A272	Chilcomb to Petersfield	79,362
A272	Winchester City boundary to Northwood Park	4,494
A272	Northwood Park to Winter Down Copse [now B3049]	13,327
A272	Winter Down Copse to Stockbridge	5,026
A30	Stockbridge to Lopcombe Corner	4,158
A3057	Steepleton to Romsey	8,659
C67	A31 [now A3090] Standon to Home Farm, Hursley Park	5,149
C198 & C168	Curdridge to Boorley Green	13,008
C200	Home Down to Park House, Hambledon (Brook Lane)	22,315
C203	Wickham Common to Newtown	3,984
A333	Ghost Corner to Winchester Bypass	3,914
A32	West Meon Hut to Droxford	34,820
	Roads total	448,285
Bridges		
B3056	Matley Bridge between Lyndhurst and Beaulieu Rd. Station	3,195
C129	Ashurst Bridge, Netley Marsh	2,644
C72	Brook Farm Bridge, Timsbury	850
C133	Lepe Bridge	745
C145	Whitney Railway Bridge, Balmer Lawn, Brockenhurst	2,004
B3084	Dunbridge Bridge	2,018
B3055	Brockenhurst Mill Bridge	2,396
A32	Warnford Bridge	4,196
	Bridges total	18,048
Various misc. items including aprons and laybys		64,867
Total Schedule III		531,200
(Source: County Surveyor's Report dated 11 June 1945 – HRO H/CX1/31/18)		

APPENDIX 5: Letter from Chief Engineer, Aldershot to Hampshire County Surveyor

Brigadier A. Hughes
County Surveyor
Hampshire County Council

Chief Engineer
Aldershot District
Our ref: C.R.A.D. 4/5627/13/RE

Dear Sir

I wish to express to you my appreciation for the work which you and your County Road Engineer staff carried out during the recent operations. It is entirely due to your efforts that we were able to pass convoys through this District without a hitch.

I should like to mention the following who did particularly good work:-

MR S. J. TILY	DIV. SURVEYOR, Alton
MR S. WARREN	DIV. SURVEYOR, Petersfield
MR WATTS	FOREMAN, Alton
MR LEE	FOREMAN, Petersfield

I should be glad if you would pass on to them my grateful thanks for all they did. In addition to your County Engineers and their staffs, the Rural and Urban District Councils did very good work and I am writing to them individually.

Yours faithfully

B.C.T. Freeland
Colonel, Chief Engineer
Aldershot district
23 August 1944

APPENDIX 6: Summary of road damage sustained within the county

Alton Division

Classified roads – Deterioration very serious within 5 miles radius of Bordon station, sound condition of asphalt and concrete carriageways in Alton compared with other surfaces.

Unclassified roads – No reconstruction or improved surface possible in the last 5 years. East of Alton owing to military traffic, and west of Alton, due to chalk subsoil, decay of water-bound surfaces is very marked.

Andover Division

Classified roads – Stood up to military traffic extremely well until the arrival of US Army and their extensive mechanisation when a certain amount of deterioration is obvious.

Unclassified roads – Suffered substantial damage due to military traffic.

Basingstoke Division

Classified roads – Only extensive damage after

5 years is on the two Trunk roads from London to Exeter and London to Southampton.

Unclassified roads – Roads from Bramley Ordnance suffered considerably, also the Stratfield Saye area.

Droxford Division

Classified roads – General condition is fair. Most damage due to the destruction of drainage owing to the construction of hard standings and where tracked vehicles have destroyed ditches and drains.

Unclassified roads – Older surfaces have suffered badly – margins and drainage require much work.

Hartley Wintney Division

Classified roads – Military traffic particularly heavy and even some modern surfaces, inc. asphalt, have suffered and become bumpy, with frequent potholes.

Unclassified roads – Older surfaces have suffered very badly.

Kingsclere Division

Classified roads – Slow deterioration in all roads.

Unclassified roads – no comment

New Forest Division

Classified roads – The roads in this division had to carry the bulk of the Invasion traffic and there is serious deterioration while roadside margins, drainage and ditches have suffered badly.

Unclassified roads – The narrow roads have suffered much damage and will require immediate reconstruction after the war.

Petersfield Division

Classified roads – A marked deterioration has been obvious during the past 12 months, particularly in the haunches. Modern surfaces have had their lives shortened. Very serious arrears in kerbing, channelling, footpaths and paving work.

Unclassified roads – Only short lengths adjoining permanent Service Establishments affected.

Ringwood Division

Classified roads – Serious deterioration in past 12 months, owing to heavy volume of tank training in the Division. Considerable damage to margins, ditches, drainage and footpaths.

Unclassified roads – Subsoil gives good drainage and roads have stood well.

Romsey Division

Classified roads – A small mileage in danger of collapse and should be resurfaced in the near future.

Unclassified roads – Have stood up well, but many are bumpy and uncomfortable to drive on.

Winchester Division

Classified roads – Modern surfaces look surprisingly well but will not last long. Roadside drainage seriously interfered with.

Unclassified roads – Large mileage shows marked deterioration.

Based on A. C. Hughes's report to CRBC on 6 April 1945.

ADDITIONAL NOTES

- (1) Hampshire's County Surveyor, Colonel (later Brigadier) Archibald Cecil Hughes, CBE 1944, MICE, DL, joined the council as Deputy County Surveyor in 1925, became County Surveyor in 1933 and held this title for 24 years. He died in 1961 at the age of 75.
- (2) In France the BEF were instructed to keep heavy traffic off the roads during the thaw to avoid serious damage (County Surveyor's Annual Report 1939/40, 69).
- (3) The War Office issued an instruction on 16 July 1940 concerning 'The Economy of Cement in Defence Posts' in an attempt to conserve stocks of cement (T/1085, in Alexander 1989, 88).
- (4) Lengthmen were allotted between four and five miles of road, depending on traffic volumes, character of road and locality. Their duties included attention to ditches and culverts, care of road margins, patching pot-holes, gritting, reporting obstructions (HRO H/CX1/31/9, County Surveyor's report to Roads Committee 7.11.1921). The Imperial War Museum was unable to provide any photos of women working as lengthmen or in the road gangs in Hampshire or in other parts of the country.
- (5) Roadworkers had received a 4s. war wage increase from 1 April 1941 giving them a basic wage of 50s. (£2 10s.) for an average 47 hours per week. Men were expected to work an extra 48 hours per month in the Civil Defence or Home Guard (Hancock and Gowing 1949, 454). In August 1941 the CRBC authorised the use of the department's ten motorcycles by their riders to act as voluntary part-time emergency messengers. The voluntary ARP services were officially disbanded on 8 May 1945 (County Surveyor's Annual Report 1945/46). The Department provided 300 men for the Civil Defence decontamination/road repair squads.
- (6) Surface dressing with asphalt macadam or surface dressing with tar or bitumen binder

- and chippings requires settled weather and a dry, dirt free surface to provide good bonding between the foundation and the pavement (road surface).
- (7) Alton 12, Hartley Wintney 10, Romsey 12, Copthorne asphalt works 3 (HRO H/CX1/31/18 County Surveyor's Report 17.1.45).
 - (8) As at 31 March 1947, the Annual Report of the CS (page 54) recorded that 358 German PoWs were employed on the county's roads, the Italians having been repatriated in the summer of 1946. Even at this late date, nine women were still employed as lengthmen.
 - (9) The need for improved road safety required drivers to have a full view of vehicles approaching a through road at a junction. This was achieved by cutting back embankments, removing hedgerows on the right of emerging traffic, starting 55ft (17 m) back from the through road and creating a cleared triangle, extending 110ft (36m) along the edge of the through road. (Ministry of War Transport 1946)
 - (10) Even by 1943 many of the vehicles were in such a condition that in normal times they would have been disposed of (J S Hall in County Surveyor's Annual Report for 1942/43).