Waste topic paper 3:

Transport policy and infrastructure

Somerset County Council

Minerals and Waste Development Framework

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Foreword

In late 2007 Somerset County Council asked local stakeholders various questions on waste management in Somerset. This formed part of its work to deliver a Local Development Framework on minerals and waste that will replace the old Minerals and Waste Local Plans.

The consultation began the process of 'continuous engagement' on waste policy, which is still underway and will culminate in the publication of the County Council's Waste Core Strategy – the main planning policy document governing the management of waste in Somerset (excluding Exmoor National Park) until 2028. Further information on the Minerals and Waste Development Framework (MWDF) is available from the Council's website: www.somerset.gov.uk/mineralsandwaste

One of the questions posed was 'Do you think the management of waste close to where it is produced should be a key planning consideration?' About two thirds of respondents answered "yes". So, when considering this issue alone, local opinion suggests the proximity principle should be applied to reduce the distance travelled by waste ('waste miles') from its point of origin to a facility for treatment or disposal.

This consultation also revealed stakeholder interest in finding an alternative to transporting waste by road, which currently dominates as the main method for transporting waste. The dominance of road transport is unsurprising since we all generate waste and the road network is best placed to service that need, extending into areas that the rail network and our waterways do not. Some respondents were sceptical or uncertain about the potential adaptability of Somerset's rail and waterway networks for transporting waste. Nonetheless, there was interest in limiting the impact of transporting waste by road.

The consultation responses reflect the local importance of this issue. How far is waste transported, how is it transported (by what method and route) and where is it transported? These questions need to be considered in the County Council's waste policy, alongside consideration of the size and impact of the network of waste management facilities needed.

Establishing what is the best solution for a largely rural county such as Somerset is challenging. In principle, a small number of larger waste management facilities may yield a lower cost per tonne of waste treated; however, this approach may increase waste miles and decrease the potential for facilities to be developed at a community scale. In contrast, a large number of smaller facilities may reduce waste miles for some but such an approach is likely to increase the cost per tonne (potentially beyond what is commercially viable). The overall sustainability of preferred waste

treatment options is a complex issue, needing to take into account the economic, social and environmental impacts of different options.

This paper forms part of the body of evidence that supports Somerset's Waste Core Strategy, outlining the policy context and the status of the transport network in Somerset and then using this knowledge to inform waste policy development. It does not seek to address all the issues identified above. However, it offers a starting point on which further research can build.

Getting waste transport right will play an important part in realising the vision set out in Somerset's Waste Core Strategy and meeting the challenges we face.

Guy Robinson
Waste Policy Manager

Contents

Introduction

This paper provides evidence to aid the development of Somerset's Waste Core Strategy.

It begins by summarising the policy context in which waste transport must be considered and what this means for waste policy (Section One). It then considers the transport networks available for transporting waste in Somerset (Section Two). The Conclusion brings this evidence together and highlights key points that should inform waste policy development.

1 The policy context

Looking at the policy context first enables us to consider the theory underlying waste transport, helping the County Council's to understand what is needed locally. This section introduces key elements of national policy (Sub-section 1.1), local policy (Sub-section 1.2), other research (Sub-section 1.3) and draws lessons from regional policy development too. From these sources the County Council can establish the main transport issues that should be considered when developing its spatial strategy, in particular for locating major waste management facilities (Sub-section 1.4).

1.1 National policy

National policy plays an important part in setting out the opportunities available and the challenges that need to be met.

'Securing the Future: delivering UK sustainable development strategy' was published by Defra in 2005 and represented central government's overarching strategy for promoting sustainable development. The report sets out four priorities, all of which have areas of relevance for this paper:

- Sustainable consumption and production – this has obvious implications for waste but also introduces the idea of lifecycle planning, whereby one must consider the impact of the whole process from production through to end-of-life (and, hopefully, recycling or reuse). This should include the environmental, economic and social costs of transporting waste, and should be considered against the benefits of the options being explored.
- Climate change – this is a key consideration that has the potential to overshadow all others. Greenhouse gas emissions from waste and waste management must be a key consideration. However, the environmental impact of waste transport to a treatment facility needs to be weighed against what would be happen if the waste were disposed of in a landfill.
- Natural resource protection –developments should avoid adversely affecting the natural environment. This has a bearing on waste management facilities and any transport used to access them.
- Sustainable Communities – perhaps the most pertinent issues addressed by this objective are those relating to community involvement and deprived neighbourhoods. (Deprived neighbourhoods tend to bear a disproportionate share of the external costs of existing transport systems.)

Planning Policy Statement One, 'Delivering Sustainable Development' builds on 'Securing the Future' and aims to help deliver the objectives set out above through the land use planning system. Appropriate spatial planning is seen as a key tool in effective delivery of these objectives, with stakeholder involvement a vital component. The statement sets six key objectives, including the following, which are of particular interest in this context:

- Contributing to global issues (e.g. climate change)
- High quality design that promotes efficient use (i.e. supporting efficient transport provision)
- Inclusive and sustainable access to developments
- Community involvement to help shape the development of our plans.

Planning Policy Guidance Thirteen (PPG13): 'Transport' sets out the way in which land use planning can shape transport to support the objectives outlined above. This is primarily described as being achieved through developing a pattern and scale of development that supports more sustainable transport whilst safeguarding and promoting facilities for appropriate infrastructure. With specific reference to freight movements key issues include:

- Consideration of available sites for transport uses
- Locating freight traffic generating developments away from central, congested and residential areas when possible
- The promotion of rail or water freight over road haulage where possible

In addition to the planning policy outlined above it is important to consider the relevance of transport policies when planning for the transportation of waste, as they dictate the services and infrastructure available. It is also important to consider the effect of waste transport on the objectives of these policies, as they tend to work in tandem with those outlined above.

'Towards a Sustainable Transport System: Supporting Economic Growth in a Low Carbon World' (TASTS) was published by the Department for Transport (DfT) in 2007. It was written in response to the Eddington Report (which recommends targeted improvements to the existing transport Network) and the Stern Review (of the economic impacts of climate change and its mitigation). TASTS also set out the government's transport aspirations up to 2014 and its longer term aspirations beyond this. As such it details the types of change that are likely to occur over the coming years and the objectives local planning authorities and other stakeholders are expected to include in their own plans.

Whilst the policy landscape has changed significantly since 2007 (politically and financially) this document remains influential, due to its focus on small and high value investments. The report sets the following key goals:

1. Improving the reliability of the existing network
2. Address climate change, through carbon pricing and low carbon technology
3. Improve safety and security on public transport
4. Improve the environment and people's quality of life
5. Reduce social exclusion by increasing accessibility for disadvantaged groups

The policies developed are spatially focussed around:

1. Cities, as they are the focus of congestion and the associated problems
2. Inter urban corridors
3. International gateways, which are asserted by Eddington to be a priority for economic success.

It suggests that these problem areas are treated by the removal of constraints upon the existing networks, using public transport where possible and maintaining a focus on climate change. As a result future transport policy should focus on capacity improvements to existing infrastructure in (and between) key urban areas.

It may be sensible to locate major new waste management facilities on a similar basis (noting the comments in PPG13 regarding the need to locate them outside built up areas). Equally, these facilities should be developed to assist with the pursuance of the objectives listed above (numbers 1, 2 and 4 in particular). TASTS also played an important part in the development of the Department for Transport's 'Guidance on Local Transport Plans' and has been an important influence on Somerset County Council's transport policies (see 'local policy' section below).

The 2007 White Paper 'Delivering a Sustainable Railway' set out the government's vision for the railway network and the improvements proposed to realise that vision. As such, it provides an indication of how the rail network available to move waste can be expected to develop. Given the long lead times involved in railway planning, this document will continue to influence the railway network even if an alternative policy is adopted by the new government (in response to McNulty's rail value for money study, for instance). Therefore, the white paper remains a key part of the policy background for this paper.

The white paper's overarching aim is to cater for dramatically increasing demand whilst reducing the burden on public finance (following recent increases in subsidy), without burdening users inappropriately. The resultant strategy (like TASTS) focuses on removing constraints to capacity on existing routes between key urban areas, whilst maintaining local routes and services. With specific reference to freight, the white paper notes the 'Strategic Freight Network (SFN) plan'. This plan aims to create a network of trunk routes by removing pinch points on routes to and from major ports. It seems unlikely that any of these schemes will affect Somerset in anything more than a very indirect way (through changes to the viability of some longer distance flows).

In summary, the white paper suggests that opportunities in rail are likely to come through improvements to the existing network. This builds upon TASTS's focus on improving the existing network, particularly between key urban areas. The planning policies summarised above concentrate on reducing the impacts of waste transport, particularly by encouraging rail and water transport and ensuring facilities are well located. However, appropriate locations should balance these objectives with the need to minimise the distance waste is transported, allow the use of suitable routes and ensure the unavoidable impacts are shared fairly across all sections of our communities.

1.2 Local transport policy

Local policy sets out the local issues that are really important to Somerset and interprets what the national guidance discussed above means for Somerset.

Somerset's transport policy

Somerset's Future Transport Plan 2011-2026 sets out the County Council's long-term strategy for getting the best from the local transport network. It includes a variety of policies that relate to waste transport; perhaps the most relevant is its freight policy:

> *We will help hauliers choose the most appropriate routes and work to improve communication between communities and the hauliers that serve them.*

Somerset's freight strategy, which is currently being developed, is expected to set a number of objectives that will help the County Council to deliver the above approach;

Manage	Get the best out of the existing network, particularly by encouraging the use of strategic routes and rail freight.
Rethink	Encourage hauliers, businesses and residents to take a more balanced view of freight transport.
Understand	Improve our knowledge of freight issues and solutions
Collaborate	Work with other stakeholders to develop new policies and solutions.

The first objective is probably the most relevant to this paper. This suggests that the approach to waste transport that gets chosen must:

- Encourage the use of alternatives to road freight (especially rail)
- Promote the use of strategic routes[1]

However, elements of the other objectives are also relevant to the proper management of waste transport through;

- Engagement with stakeholders
- Providing good quality information to those transporting waste
- Contributing to other policies and our knowledge base

Learning from regional policy development

The Regional Spatial Strategy for the South West (RSS) was drafted to become a regional policy, covering a range of planning issues including freight transport. However, the strategy has recently been abolished by central Government and the Localism Bill calls for local authorities to develop their own policy to replace the RSS. Whilst noting the importance of this change, some of the evidence used to develop the RSS remains relevant for local policy development.

The draft RSS suggested that waste facilities should be located within 16 kilometres of the key urban areas (SSCTs) and 2 kilometres of county freight routes. This policy is based on similar objectives to those which informed Somerset's Future Transport Plan and the freight strategy currently being developed by Somerset County Council, as it attempts to minimise the impacts of transport by reducing distance travelled and encouraging the use of the most appropriate routes. As these parameters broadly fit with local priorities, it seems appropriate that any strategy for waste transport should continue to include them, unless they can be made more relevant by a more local source of information.

1.3 Other research

'Zoning'

In late 2006 and early 2007 Somerset County Council undertook a survey of businesses to understand their relationships with waste. This was known as a 'Commercial and Industry Waste Survey'. The study suggested that it would be useful to divide Somerset into three zones based on;

[1] These strategic routes are set out in the Somerset Freight Map (shown in the Appendix). The map was developed by SCC in conjunction with the Freight Transport Association, the Road Haulage Association, Avon and Somerset Constabulary and the Somerset Freight Quality Partnership (which represents a number of other stakeholders).

1 The different types of businesses in these areas, which have different waste needs.

2 The other places businesses in these areas are linked with and the transport corridors they use (particularly for road freight).

The outcomes of this survey are summarised in Waste Topic Paper 5 headed "Commercial and Industry Waste Survey Summary".

When considering how, or indeed, if these three zones should be taken forward in the development of the County Council's Waste Core Strategy, it was noted that accurate data on municipal waste arisings could be compromised if these zones were applied to considering MSW arisings too. Furthermore, each of the three zones in the commercial and industrial waste study covered a large area – potentially too unwieldy to give the waste industry adequate guidance on broad locations for strategic waste development and the environmental and historic areas of Somerset adequate protection. Nonetheless the commercial and industrial waste survey study provides a useful backdrop to the movement of C&I waste in Somerset.

A zonal approach was reframed in research commissioned by Somerset County Council that informs the preparation of another topic paper, which sits alongside this one, known as 'Waste topic paper 2: Broad locations for strategic waste management facilities'. The report considers the general areas, or 'zones', where strategic waste facilities could be located in Somerset. Therefore, it seems sensible that Section Two of this paper should consider both what defines a suitable area in transport terms and the suitably of the zones discussed in 'Waste topic paper 2'.

Distances

As part of its requirements in delivering its Minerals and Waste Development Framework, the County Council has prepared an Annual Monitoring Report (AMR). And the research undertaken in preparing the AMR should inform the local position too.

Between 2004 and 2009, the County Council monitored the average distance that waste travelled for disposal. The results of this monitoring are shown in the table below.

Year	Distance travelled (average based on 5 districts) in miles
08-09	12.9
07-08	12.9
06-07	13.1
05-06	13.0
04-05	12.8

Calculating the average of these figures and converting into kilometres yields an average distance of 21km.

In a rural county such as Somerset, this may be used as a more locally-relevant distance for waste transport, in preference to the 16km range suggested by the draft Regional Spatial Strategy for the South West.

That said, a distance of 21km implies a sphere of influence and thereby a definition of proximity that is greater than some may prefer. Setting a shorter target distance for waste transport may be worth considering. For instance, under a more decentralised approach, one could aim to halve this average distance. However, whilst this may lead to closer proximity for one town, it is likely to lead to further waste transport distances for other settlements, since it is unlikely that each town could support its own waste treatment facility.

1.4 Implications for the Waste Core Strategy

The policies and research discussed above suggest a number of aims that the County Council's Waste Core Strategy might help to deliver, specifically to:

- Minimise the adverse impact of waste transport on the environment and our local communities
- Promote rail and water freight where practicable
- Engage with and inform waste hauliers / companies about the impacts of waste transport and foster better communication between the waste hauliers / companies and local communities.

To deliver these aims, appropriate policies should explore the potential to support the location of major new waste facilities as follows:

- In places that make the most of opportunities to use rail or water transport.
- On or close to strategic freight routes, this potentially could be defined as within 2km.
- In close proximity to our main urban areas, which potentially could be defined as within 21km (the average distance waste was transported for disposal between 2004/05 and 2008/09). An alternative approach could be to define proximity as being closer to settlements, potentially halving this distance; however, this may lead to shorter distances for some and longer distances for others.

2. Somerset's transport infrastructure

This section sets out the reality of the networks Somerset has to transport waste and what this means for the approach to waste transport that Somerset's Waste Core Strategy selects. It begins by discussing the rail network (Sub-section 2.1), then the potential for water freight (Sub-section 2.2) and finally the road network (Sub-section 2.3). It also considers transport opportunities in the zones proposed in 'Waste topic paper 2' (Sub-section 2.4). By bringing together all of this information the County Council can generate a good idea of the local transport network and consider if there is scope for greater integration of transport options, potentially supporting a multi-modal approach to waste transport (Sub-section 2.5).

It should be noted that whilst there may be growing interest in exploring more sustainable methods of transportation and easing the pressure on the county's road network, the logistical reality of integrating different forms of freight transport is complex.

The highly dispersed nature of waste arisings means that a degree of 'bulking up' of waste is needed to ensure that long, inefficient journeys are not made by small or partially-loaded vehicles. For alternative forms of transport to be considered, such bulking up would need to occur adjacent to a port or railhead. Sufficient space would be needed for temporary storage and handling, prior to the waterway or railway line being able to deliver the waste material to an appropriate site for treatment, disposal or onward transport by road.

The challenges, in land-use planning, to bring together the relevant elements of this picture are significant. However, it is important to explore the role that rail and water freight can play in waste transport in situations where requirements such as those listed above can be satisfied.

2.1 Rail

Rail freight can offer an efficient and desirable alternative to road haulage and could help remove high volumes of freight traffic from the county's roads. Somerset's transport policies support growth in rail freight and developments that promote rail freight. To make the most of rail freight:

- The waste supplier and the waste user would both need to be able to access the rail network easily. This is important as long road trips at either end of the journey undermine the benefits of rail freight.
- The waste needs to be transported over relatively long distances in order to realise the benefits rail freight can offer.

This means that rail freight is best suited to longer distance waste movements that begin and end near the rail network.

Figure 1 below shows the rail network in Somerset. Whilst Somerset does not have any major waste facilities served by rail at present, a significant volume of rail freight is generated by Somerset's quarries. This highlights the potential suitability of the rail network for transporting waste (particularly as waste and aggregates have some similarities in their transport requirements). However, whilst this suggests potential feasibility, it does not allow us to suggest that specific routes or facilities could use or be served by rail freight without further consideration.

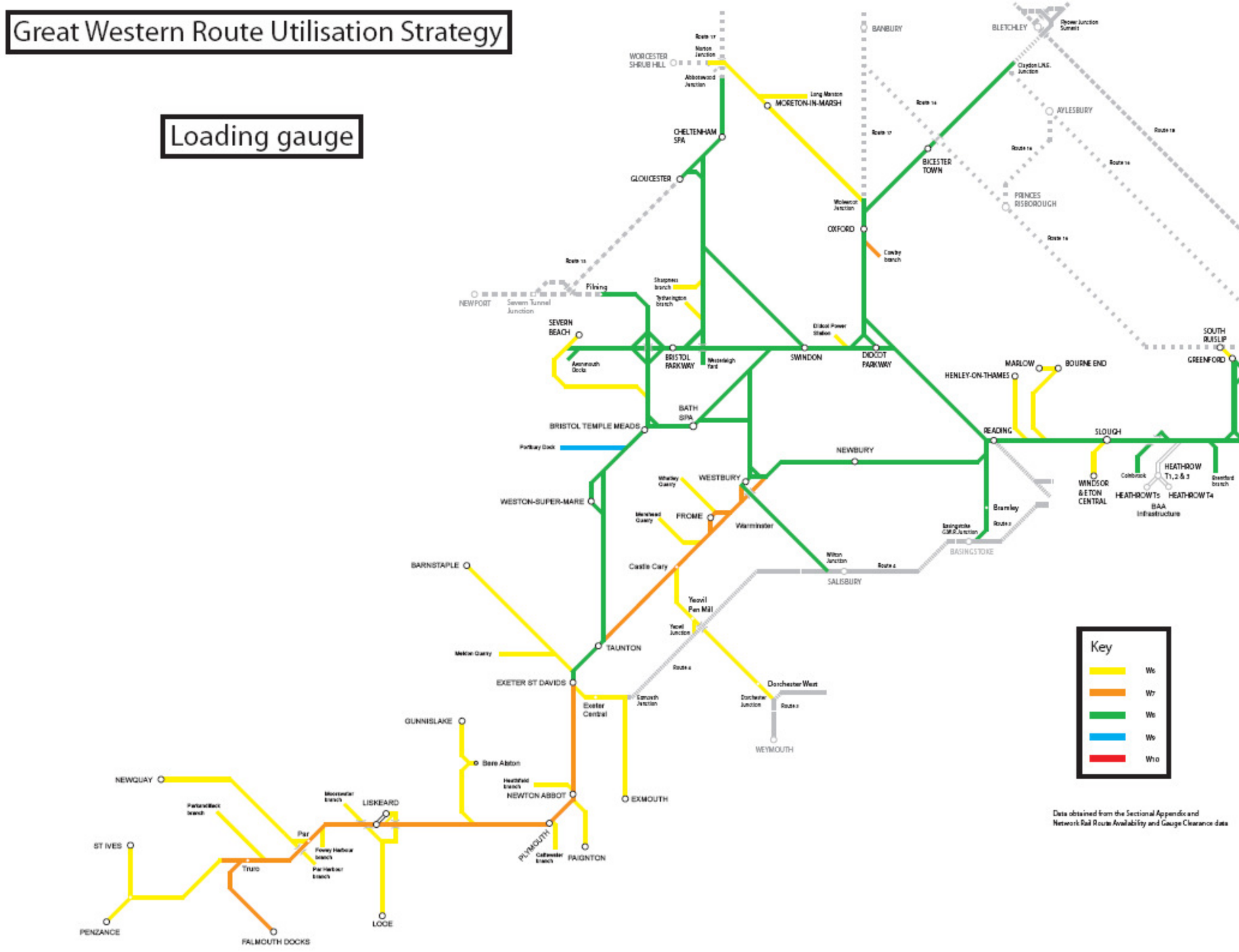
Another important consideration is the capacity of the network to accommodate additional freight trains. Capacity to run freight trains between pre-existing services is a complex issue that would have to be explored with Network Rail and other stakeholders on a line by line basis.

The loading gauge of the line (the size of container/vehicle that can travel along the line) is an important pre-condition for promoting rail freight. If big enough trains cannot use a route the cost of upgrades would be likely to be prohibitive. Figure 1 also includes the loading gauges in the Somerset area. The network in this area is insufficient to cope with the increasingly popular W12 gauge containers, and beyond the Bristol to Exeter line loading gauges are more constrained. However, this is by no means uncommon and gauge constraints can often be mitigated through the use of innovative containers.

This does not suggest any specific routes in Somerset as being particularly suitable or unsuitable for rail freight, as such all routes will be considered equally in this study.

In addition to the mainline railway network there are a number of preserved lines, run primarily for heritage purposes. The West Somerset Railway (which runs from Taunton to Minehead), in particular, is often suggested as having potential for freight transportation. The line has occasionally been used for freight movements but is run as a successful tourist attraction and the leaseholders would be unlikely to allow any developments that would significantly affect this. There would also be a number of issues which would need to be addressed relating to the licensing agreement under which the line is run.

Figure 1 – The Mainline Rail Network and Loading Gauge in the South West (taken from Network Rail's 'Great Western Route Utilisation Strategy', 2009 p.61)



2.2 Water

Water transport provides a potentially more sustainable and reliable alternative to road transport for the movement of goods, particularly for heavy loads like waste. As such, any opportunity for the use of water borne transport for the movement of waste should be explored.

In reality, the potential for inland water transport in Somerset is relatively limited due to the extent and capacity of the canal network. A study commissioned by the DfT to describe the freight potential of inland waterways classifies Somerset's larger inland waterways within the 'other' category (this classification is based upon reach, width and potential market). They are, as such, described as having lower potential for utilisation for freight transport than the core network.[2] This suggests that Somerset's inland waterways are unlikely to form a significant part of the County's waste transport network.

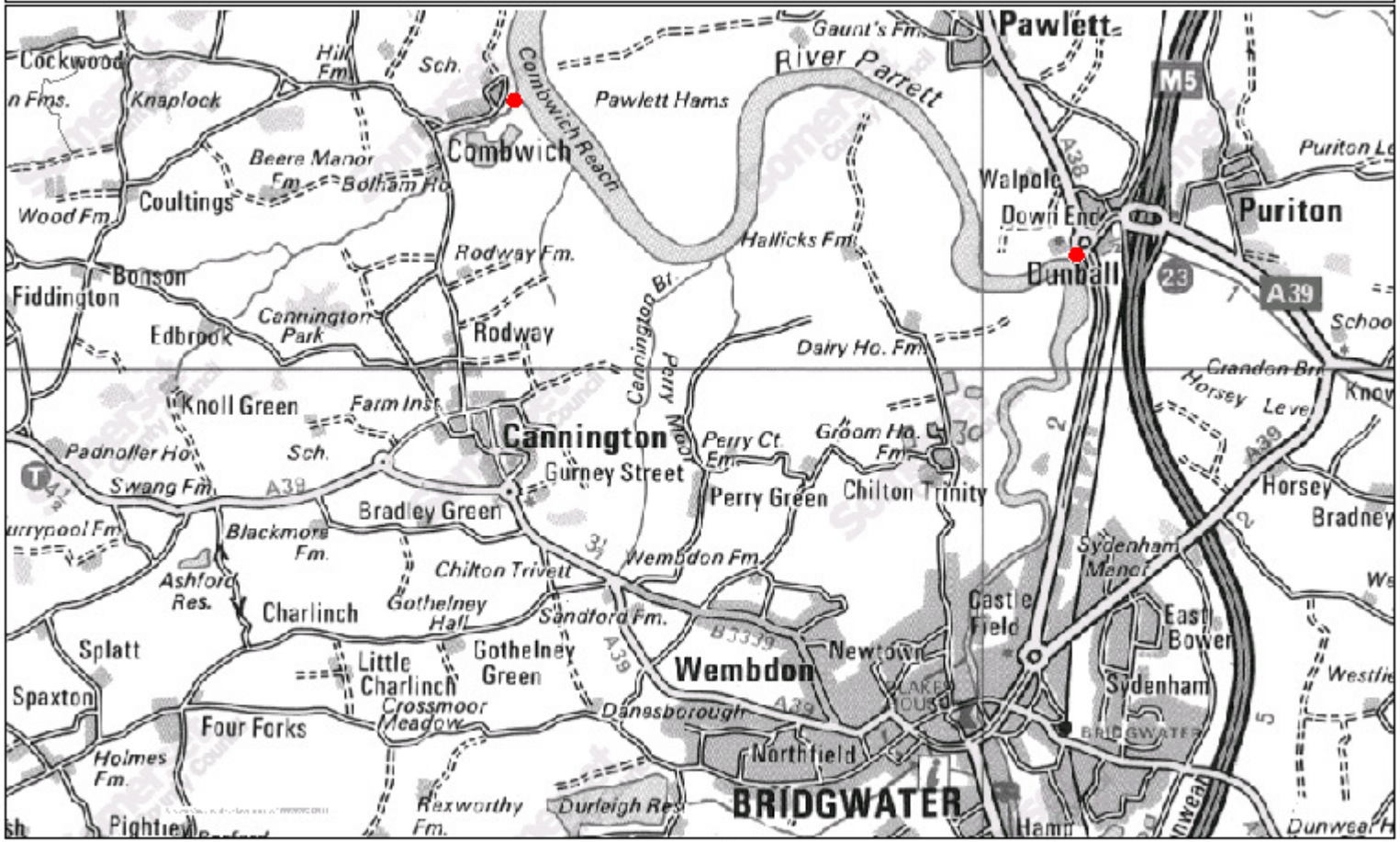
A number of ports on the Somerset coast are recorded as having occasional/historical use for freight transport but would be likely to require significant investment to allow their commercial use. Bridgwater Port provides a more realistic opportunity for the transport of waste, with two key wharfs; Dunball and Combwich, currently in commercial operation (both detailed in figure two below). Dunball wharf appears to have better road access being located off junction 23 of the M5 (see s2.3 for details of the suitability of this road) whereas Combwich would require access via less appropriate B and C classified roads.

The proposed major development of a new nuclear power station at Hinkley Point could dominate the use of the Dunball wharf and absorb much of the capacity of Combwich wharf. However, there may be potential for future expansion and related opportunities should be considered. Indeed, improved facilities that may result as a legacy of any development at Hinkley Point may increase the attractiveness of these facilities in the medium term.

Like rail freight, in general terms, water transport is more appropriate for longer distance movements and it is important to consider the affects of longer trips and their door-to-door impact (including getting waste to and from the port). As such, the role of water transport is determined to a large extent by where the waste is being transported to and the availability of suitable facilities at or near the destination. Within this context it may be appropriate, particularly in the longer term, to consider the potential role of water freight in linking Somerset to ports in South Wales and Avonmouth and comparing the benefits of such an approach with any more local solutions that are identified.

[2] Map of Key Inland Waterways of Great Britain with Freight Potential. Produced for the Department for Transport by Capita Symonds Ltd, published 2008.
(Available at - www.dft.gov.uk/pgr/freight/waterfreight/)

Port of Bridgwater - key wharfs (red points)



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2.3 Road

This section of the paper describes Somerset's road network and its suitability for transporting waste. It begins by describing the most suitable parts of our road network for transporting waste and the things that affect the performance of these roads. It finishes with a summary of the potential for new roads that might help transport waste.

The preferred network

Somerset's Freight Strategy (see Section 1.2) aims to promote the strategic freight network for use by Heavy Goods Vehicles whenever possible. The strategic freight network is made up of the top two tiers of the Somerset Freight Map, known as 'national freight routes' and 'county freight routes' (see map in appendix one). Promoting the use of the most appropriate routes helps to reduce the impact large vehicles have on local communities and the environment, whilst providing efficient routes for hauliers.

Any site chosen for major new waste facilities should be easily accessed from the strategic freight network. For the purpose of selecting general areas of search for such facilities (and minimising the data required) one could define this in terms of being within two kilometres of the strategic freight network (following the approach suggested in the abolished draft Regional Spatial Strategy for the South West). This would help waste to be transported efficiently avoiding unsuitable routes. However, in reality the implications of accessing the strategic freight network would need to be assessed on a site by site basis as specific sites begin to be considered. Therefore a more flexible approach is likely to be required.

The performance of the preferred network

The strategic freight network in Somerset is not of a uniform quality and parts of it are less suitable for freight transport than others. Additional traffic should not be encouraged to use the less suitable sections.

Understanding the performance of the road network is a very difficult task and even a simple model of the strategic freight network would require a good deal of data and analytical work. This falls beyond the scope of this paper (and that of many far more significant studies). However, it is possible to identify a number of areas which would be less suitable for additional traffic using data from existing studies.

NOTE; this information is included in this paper simply to assist in identifying important considerations at a strategic level. It is in no way a substitute for proper assessment of any site that may be considered in the future. Equally, as noted above, no account is taken here of the suitability of the links between the strategic freight network and any potential sites within the two kilometre limit mentioned above. The information given here is designed purely to guide policy development and is in no way a substitute for the appropriate assessments of the effects of accessing any potential facility.

Congestion

Congestion can have a big impact on how suitable a road is for waste transport. Congestion could affect the efficiency of any waste facility located on a particularly congested road and the extra traffic it would generate could make the congestion even worse for all road users.

The data presented below are derived from the Saturn traffic models developed to describe the study areas of the Taunton and Yeovil Second Transport Strategy reviews. The models provide a simulation of traffic conditions, for a base year of 2011, during the morning peak hours (and should therefore represent the worst traffic conditions at any point in the day). The capacity of the roads in question is measured as a percentage of the capacity at its junctions (it is generally accepted that capacity is most constrained by junctions).

It is worth noting that Saturn models are primarily designed to simulate interactions at a strategic level, rather than at the local level at which they are being employed here. As such, the figures given should be treated with caution, as whilst they provide a useful indication of the relative levels of congestion on the roads considered, they cannot be used to provide absolute figures.[3]

Figure three below provides a brief description of the situation at the junctions between freight routes near to key urban areas (as discussed above). The traffic light style colour coding is designed to provide a simple initial summary of the situation at the junctions. The key below explains this colour coding:

Key	
0-85% of capacity (0-90% at signalised junctions)	
85-100% of capacity (90-100% at signalised junctions)	
100% of capacity and over	

The capacity of a junction compares the number of vehicles passing through it in an hour with the maximum number that could possibly have passed through it in an hour. Due to the way capacity forecasts are made, 85 per cent of capacity is generally accepted to be the maximum level that is acceptable.

[3] Unfortunately the Saturn models used to provide the data above do not include a number of junctions relevant to this study and as such they have not been included in this table or figure four..

Figure 3 – Traffic flows at junctions identified in SCC Saturn modelling (in the types of areas discussed above)

Junction		Description of capacity issues – 2011 AM peak
M5 – A38 jct 23		Movements from the M5 are slightly over capacity to the A38, movements from the north on the A38 are also relatively congested (81%).
M5 – A39 jct 23		Movements to and from the M5 to the A39 eastbound are approximately at capacity, whereas movements in the opposite directions are at a more comfortable level.
M5 – A38 jct 24		Most elements of the junctions involved in this movement are currently at a relatively acceptable capacity (although movements through the roundabout on the A38 from the M5 to the A38 heading northwards are shown to be at 64% of capacity).
M5 – A358 jct 25		The movements between the M5 and A358 are all over 65%, moving to and from the westbound stretch of the A358 are particularly congested all being slightly over capacity.
M5 – A38 jct 26		As can be expected exit flows from the M5 are relatively free flowing, however movements onto the M5 are running at around 75% of capacity.
A303 – A3088		The approaches to this roundabout are significantly over 65% with the eastern approach stated as being at 113% of capacity.
A303 – A37		The majority of the approaches to this roundabout are over 65% of capacity and the A37 heading south towards Yeovil is already over capacity.
A38 – A358		The junction between the A38 and A358 is split over two junctions separated by a shared section of carriageway. At the eastern end (Creech Castle) the relevant flows are between 91 and 95%. At the western end (known as Wickes roundabout) the relevant arms are all over 100% of capacity. Both of these junctions are recognised as being problematic, and the figures above are likely to understate the situation.
A38 – A39		The A38 and A39 meet in Bridgwater and effectively run together through the town. Where they meet in the south capacity for movements to and from the A39 ranges between 80% and 105%. Movements to and from the A38 are 77% and 101% respectively. The roundabout at the northern end is generally less congested but the A39 approach has an average capacity of 91%.
A39 – A372		Left turn movements from the A372 onto the A39 are currently at 101% of capacity, it also worth noting that movements to and from Eastover are similarly over capacity.

Pinch points

The suitability of the network for accommodating increased HGV traffic cannot be defined solely by levels of congestion. Even on the strategic freight network there are various other constraints that need to be considered, such as low bridges or narrow roads. This sub-section of the report uses the results of a survey of HGV 'pinch points' completed by Somerset County Council in 2002 in conjunction with a series of interviews conducted with officers at the Local Area highways Offices exploring similar issues in 2007.

Once again this is (necessarily) purely a summary of some key issues and one cannot, therefore, take the absence of a route from this report as a guarantee that no such constraint exists upon it. Many other routes are likely to have similar constraints.

The locations detailed below describe the pinch points highlighted in the aforementioned study that are located on the strategic freight network near to key urban areas (as discussed above).

a. The A358 north west of Bishops Lydeard suffers from a number of constrictions. These include a number of 4.2 metre (14ft) height restrictions where the road is crossed by the West Somerset Railway and other pinch points caused by the roads alignment and width. As such the A358 is not a suitable route for large vehicles beyond Bishops Lydeard.

b. The A39 at Keenthorne (between Bridgwater and Nether Stowey) was identified as a pinch point due to the narrow carriageway (which is exacerbated by the fact it is directly abutted by hedges with no verge). As such it would not be advisable to encourage extra HGV traffic on this route in its current state.

c. Silverfish Junction (where the A39 joins the A39 link from junction 23 of the M5) is recognised as generating considerable congestion due to a layout that does not adequately cater for certain HGV movements (as is reflected in the figures given above for the junction). The problems at this junction have also been acknowledged by the Somerset Freight Quality Partnership.

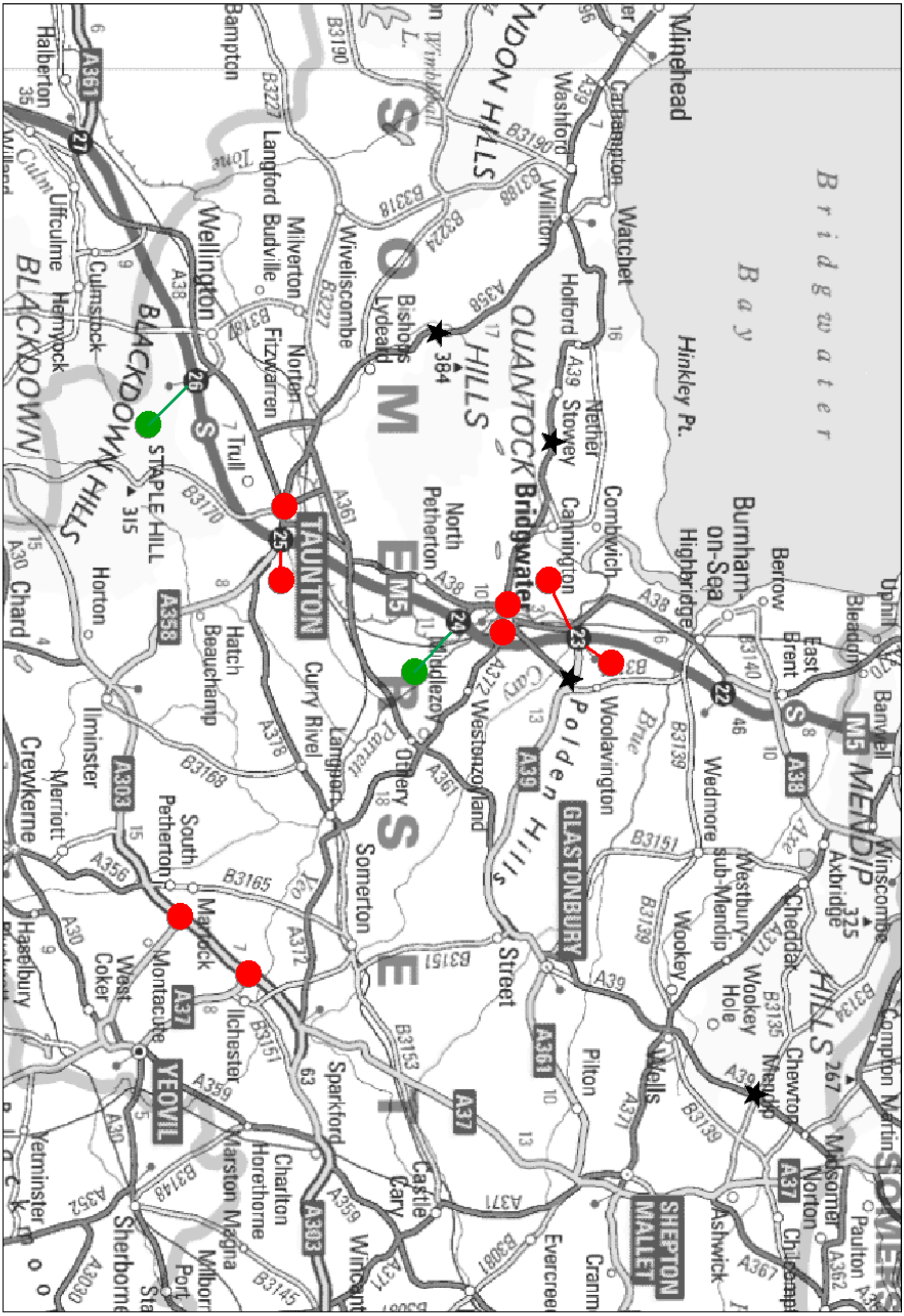
d. The A39 through Chewton Mendip is identified as narrow and being constrained by walls and higher surrounding ground, as such it too would be unsuitable for increased HGV traffic in its present form.

The 2002 study also suggested provisional costs (at 2002 levels) for various mitigation schemes that may be helpful if further consideration of relevant sites is necessary (contact author for further information).

Graphical summary of road capacity information

Figure 4 overleaf provides a graphic representation of the congestion and pinch points data summarised above (the key follows on page 18).

Figure 4 – Graphic representation of junction capacities



Key	
0-85% of capacity (0-90% at signalised junctions)	●
85-100% of capacity (90-100% at signalised junctions)	●
100% of capacity and over	●
Pinch Points (as defined in s3.3.2)	★

New routes

In line with the policy agenda set out in Section Two of this report, developments to Somerset's transport networks are likely to focus on improving problem areas on the existing network and intelligent management of demand. As such, the current program of infrastructure works tends to focus on improvements to existing roads and involves very few new routes. The only new routes planned at present are designed to serve the County's growing urban areas and allow better utilisation of town centre space. The potential for any new routes that are developed in the future to contribute to waste transport in Somerset should be considered as opportunities arise.

2.4 Transport opportunities in the potential zones

As noted in Section 1.3, 'Waste topic paper 2: Broad locations for strategic waste management facilities' considers general areas, or 'zones', where waste facilities should be located. This work has been undertaken alongside this paper and builds upon the principles set out above, in terms of the type of area required.

This sub-section considers the areas set out in 'Waste topic paper 2' and how they fit with the principles developed above. The tables below build on the transport information included in the paper to provide a more detailed understanding of the potential of each zone in transport terms. It provides a brief commentary and summary classification for different modes at each site.

The summary classifications provide an indication of the performance of a zone for the given mode. They are designed to aid interpretation of the written material and should be used in combination with (*not* instead of) the text in the table and the remainder of the report. The key below the table explains the meaning of the classifications employed.

Zone A	Bridgwater	Summary
Rail	The zone is intersected by the mainline railway (with a relatively large loading gauge of W8) and has a history of rail freight movements. There is potential for the re-use of existing facilities, such as the disused railhead in the Royal Ordnance Factory at Puriton.	1
Water	Served by the Taunton to Bridgwater Canal and Dunball and nearby Combwhich wharfs. Whilst the potential for utilising the canal is uncertain both wharfs are currently in use and are likely to be upgraded as part of any development of a new nuclear power station at Hinkley Point.	1
Road	The zone is well served by a number of key freight routes and Bridgwater is a growing centre for the distribution industry. However, the area also suffers from congestion and includes a number of the over capacity junctions highlighted above. Baseline modelling undertaken to support the proposed development of a new nuclear power station at Hinkley Point provides more detailed information on congestion in and around the zone, which might help inform any further consideration of this zone.	1

Zone B	Taunton	Summary
Rail	The zone is intersected by the mainline railway (with a relatively large loading gauge of W8) and has a history of rail freight movements. There would appear to be potential for the re-development of disused facilities in the area, subject to consideration of other development plans within the zone.	2
Water	Whilst the zone is served by the Taunton to Bridgwater Canal and River Tone, both of these links are noted as having lower potential for freight utilisation in the DfT report discussed above.	2
Road	The zone is well served by a number of key freight routes. However, the area also suffers from congestion and includes a number of the over capacity junctions highlighted above. Modelling work undertaken by SCC for a number of studies provides more detailed information on congestion in and around the zone which could be used to inform any further consideration of this zone.	1

Zone C	Yeovil	Summary
Rail	Yeovil is served by two rail lines, both with a history of rail freight movements and disused facilities that could offer the potential for reuse. However, both lines are relatively distant from the zone and would require additional movements (across the town) to access them.	2
Water	The River Yeo is located to the east of Yeovil but is not listed in the DfT report referenced above as having freight potential. It is also distant from the zone and would require additional movements (across the town) to access it.	3
Road	The zone is reasonably well served by freight routes (primarily via A3088 to the A3003) but also suffers from congestion at points on this network. Modelling work undertaken as part of SCC's 'Review of Yeovil Eco-Urban Extension' could provide more detailed information on congestion in and around the zone which could be used to inform any further consideration of this zone.	1

Zone D	Street and Glastonbury	Summary
Rail	There is no railway line in close proximity.	3
Water	There are no waterways listed (in the DfT report referenced above) as having freight potential in close proximity.	3
Road	The zone is centrally located and served by two freight routes. However, movements to and from the south are less well provided for, with no direct freight routes in this direction. No congestion issues were identified above but this may be due to the fact that this area is less well covered by existing traffic models than zones in the larger urban areas. Therefore, further information on local traffic problems would be particularly important if this zone were to be considered further.	2

Zone E	Wells	Summary
Rail	There is no railway line in close proximity.	3
Water	There are no waterways listed (in the DfT report referenced above) as having freight potential in close proximity.	3
Road	The zone is relatively well served by two freight routes. However the east-west route (A371) is a 'Local Freight Route' and is less well suited to increased HGV flows than routes noted above (which tend to be national or county freight routes). No congestion issues were identified above but this may be due to the fact that this area is less well covered by existing traffic models than zones in the larger urban areas. Therefore, further information on local traffic problems would be particularly important if this zone were to be considered further.	2

Zone F	Frome	Summary
Rail	The zone is intersected by a railway line with a loading gauge of W7, which supports a number of considerable rail freight flows to nearby quarries. There also appears to be potential for the re-development of disused facilities in the area, including sidings in the vicinity of Frome station.	2
Water	The River Frome intersects the zone but is not listed in the DfT report referenced above as having freight potential.	3
Road	The zone is peripherally located close to the County's border but has reasonable access via one county freight route. No congestion issues were identified above but this may be due to the fact that this area is less well covered by existing traffic models than zones in the larger urban areas. Therefore, further information on local traffic problems would be particularly important if this zone were to be considered further.	2

Key to 'Summary' classifications (see also note above)		
	Rail or water	Road
1	Possible, without significant development or additional movements to access facility.	Suitable routes in most directions.
2	Possible but would require more investment or additional movements to access facility.	Suitable routes in some directions.
3	No opportunity without significant investment / development.	No suitable routes.

2.5 Summary

Somerset's rail and water freight networks may offer effective options for longer distance transport of waste. This may be helpful if long distance transport is required and if waste supply points and treatment or disposal facilities can be located in the "right" places relative to the rail and water networks.

Where this is not possible, it is important to ensure the most appropriate routes are used to move freight by road. Facilities that require waste to be transported by road need to be located near a strategic freight route and away from known problem areas.

Different zones present different combinations of transport opportunities and some are better aligned with the transport objectives outlined here than others. However, different zones would be better suited to different ways of managing waste, this has implications for the type of transport required. It means that the best option might not be the best zone from a purely transport perspective. It will be important to consider how the transport options available fit with the chosen waste management approach.

3. Conclusions

Based on the research undertaken, the County Council's Waste Core Strategy might help to deliver the following aims, specifically to:

- Minimise the adverse impact of waste transport on the environment and our local communities
- Promote rail and water freight where practicable
- Engage with and inform waste hauliers / companies about the impacts of waste transport and foster better communication between the waste hauliers / companies and local communities.

To deliver these aims, appropriate policies should explore the potential to support the location of major new waste facilities as follows:

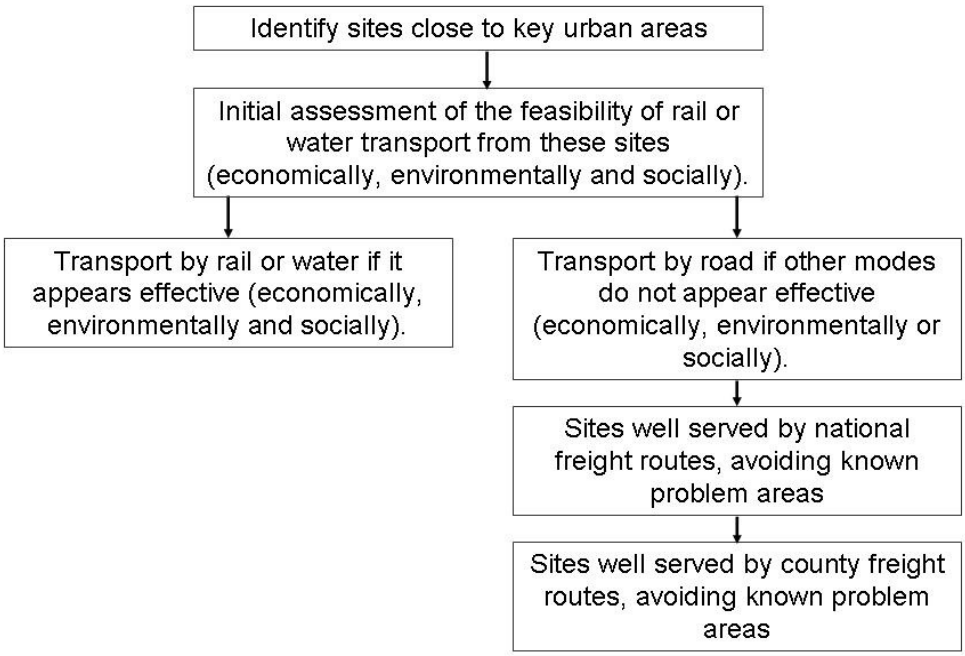
- In places that make the most of opportunities to use rail or water transport.
- On or close to strategic freight routes (potentially within 2km), thereby promoting the use of the best possible roads where alternative modes are not viable
- In close proximity to our main urban areas, this potentially could be defined as within 21km. A definition based on closer proximity may be worth exploring too; however, this would need to be considered in the context of the overall need for waste treatment capacity across Somerset and the economics of waste facility development. A closer definition of proximity may in fact result in waste from some areas travelling significantly further for treatment or disposal.

This suggests a hierarchical approach could be explored when selecting the best possible site (from a transport perspective) for locating major new waste facilities.

Figure five (below) depicts the various stages in such a hierarchy and could be used to identify the best sites for future facilities. This would allow the selection of the types of site that will minimise the impact of waste transport on Somerset's communities and environment. The information provided in Section 2.4 offers a basis on which the zones discussed in 'Waste topic paper 2: Broad locations for strategic waste management facilities' could begin to be considered in the context of such a hierarchy.

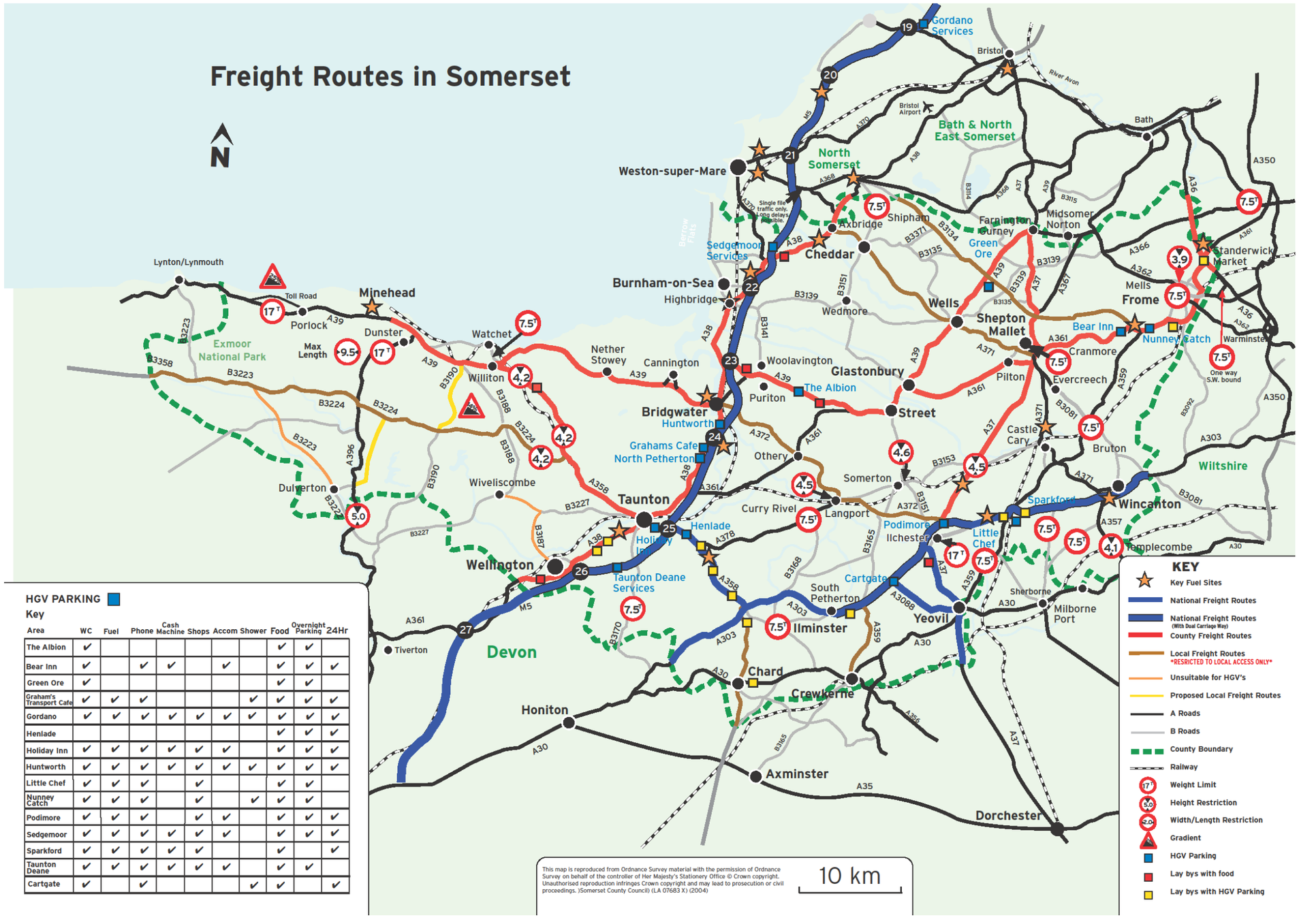
As noted previously, the appropriate assessment of sites within such areas remains vital as they are considered in more detail. Assessment of the suitability of different modes and sites must consider all possible impacts for the complete journey.

Figure 5 – A potential hierarchical approach to locating sites



Appendix one – The Somerset Freight Map

Freight Routes in Somerset



HGV PARKING

Key

Area	WC	Fuel	Phone	Cash Machine	Shops	Accom	Shower	Food	Overnight Parking	24Hr
The Albion	✔							✔	✔	
Bear Inn	✔		✔	✔		✔		✔	✔	✔
Green Ore	✔							✔	✔	
Graham's Transport Cafe	✔	✔	✔				✔	✔	✔	✔
Gordano	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Henlade								✔	✔	✔
Holiday Inn	✔	✔	✔	✔	✔	✔		✔	✔	✔
Huntworth	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Little Chef	✔	✔	✔		✔			✔	✔	
Nunney Catch	✔	✔	✔		✔		✔	✔	✔	
Podimore	✔	✔	✔		✔	✔		✔	✔	✔
Sedgemoor	✔	✔	✔	✔	✔	✔		✔	✔	✔
Sparkford	✔	✔	✔	✔	✔			✔		✔
Taunton Deane	✔	✔	✔	✔	✔	✔		✔	✔	
Cartgate	✔		✔				✔	✔		✔

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