#### **EXHIBIT LIST**

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### **Traffic Assessment Overview**

June 2016

## Transport Assessment (TA) methodology (1)

The TA calculates traffic and transport impacts of the Proposed Scheme during construction and operation; traffic and transport *significant effects*<sup>1</sup> are reported in the Environmental Statement (ES)

Key traffic and transport impacts principally arise from construction activities (eg diversions, construction traffic and workforce), compared with a forecast baseline (ie without HS2), which includes committed and planned development

<sup>&</sup>lt;sup>1</sup> Significant effects are defined in the HS<sub>2</sub> Phase One Scope and methodology report (CT-001-000/1), November 2013



## Transport Assessment (TA) methodology (2)

The following traffic and transport effects have been assessed in the ES:

- traffic flows and delays to vehicle occupants
- pedestrians, cyclists and equestrians severance, delay, amenity and ambience
- public transport delay
- disruption at stations/interchanges
- parking and loading
- accidents and safety
- severance
- waterways.



## Transport Assessment (TA) methodology(3)

For consistency, the TA generally assumes a 2021 forecast baseline for the whole Phase One route.

The operation assessments have been carried out for the forecast years of 2026 and 2041 (year of opening plus 15 years).

The forecasts for construction and operation years use strategic models, or DfT standard growth factors, to take account of growth.

The assessments have been carried out for AM (0800-0900) and PM (1700-1800) peak periods, which are typically the busiest times of the day - it does not assume that impacts only occur at this time.



## Transport Assessment (TA) methodology (4)

The DfT PLANET demand model has been used to forecast the change in passenger demand at rail stations arising from the operation of HS2.

In the London, Birmingham Interchange and Birmingham Metropolitan areas, where the interactions of transport user behaviour are complex, existing strategic transport models have been used to assess the changes to highway and public transport flows and delays.

The strategic transport models have been developed and used in close collaboration with local transport authorities and inputs agreed with them.

Local junction models have been developed and used in consultation with the relevant highway authority to assess changes to vehicle delays in more detail.



### The TA construction assumptions (1)

The TA makes a number of assumptions that are precautionary and based on a realistic worst case; in practice, the impacts are likely to be less than assessed:

- the assessment is based on average daily trips for the peak month of construction activity; for most of the time the actual number of construction trips will be lower than this peak
- all compounds are generally assumed to be in use at the same time; in practice concurrent use will be less frequent
- all the workforce for sites outside of London is assumed to travel to/from the construction compounds by car; however, some of the workforce will use public transport, works buses or other methods
- 50% of the workforce is assumed to arrive between 0800-0900 and depart 1700-1800, overlapping with construction traffic; in practice, most of the workforce is likely to arrive/depart outside these times
- transport of excavated material (mass haul) to/from compounds by road is based on an eight hour day (outside London), for five days each week; in general, core working hours will be o800 to 1800 on weekdays and o800 to 1300 on Saturdays



### The TA construction assumptions (2)

#### The assessment:

- does not take into account other potential mitigation such as further opportunities that may arise to remove excavated material by rail at Euston and Langley, and also increased removal by rail at West Ruislip;
- does not include time and capacity controls as set out in Schedule 17 of the Bill;
- excludes measures arising from the implementation of the Code of Construction Practice (CoCP) and any construction workforce travel plan.



### **Traffic and Transport exhibits**

The traffic exhibits are produced to show the routeing and number of construction vehicles along the road network that are generated by the construction of the HS2 scheme.

Where required, exhibits showing other transport impacts have also been produced for certain locations, such as pedestrian and cycle diversions and maps showing road closures

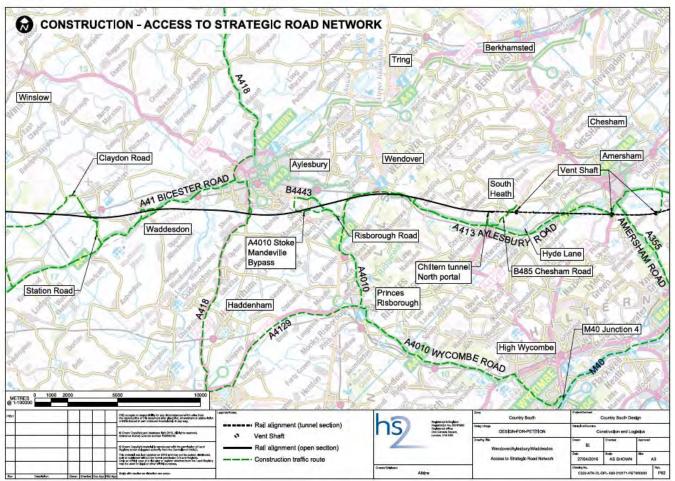
The standard set of traffic exhibits normally comprises:

- access to strategic road network map;
- construction compound routes and vehicle numbers map;
- daily weekday traffic flows construction phase map;
- construction traffic histogram for specific locations.

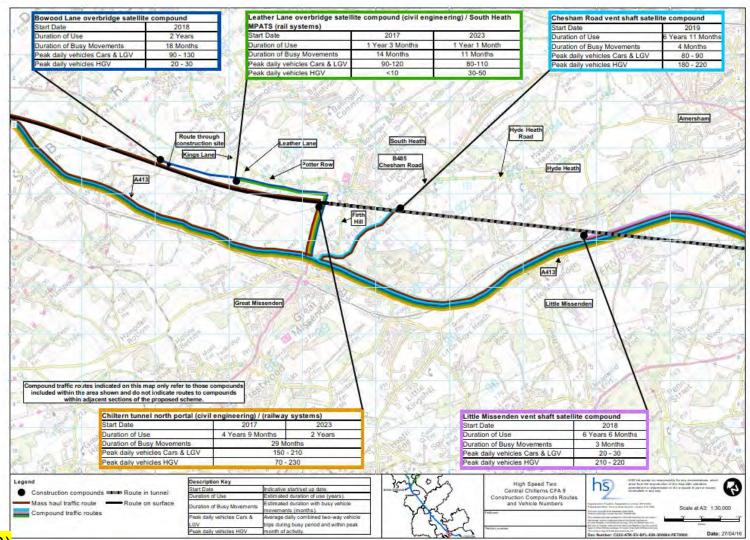


#### Access to strategic road network

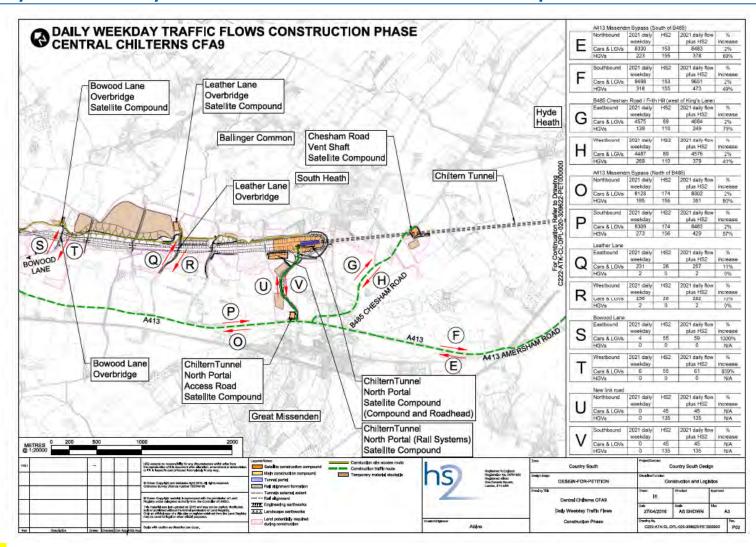
The sample map shows the strategic road network used by construction vehicles (>7.5t), along with the HS2 railway alignment and relevant locations, together with features of the HS2 route



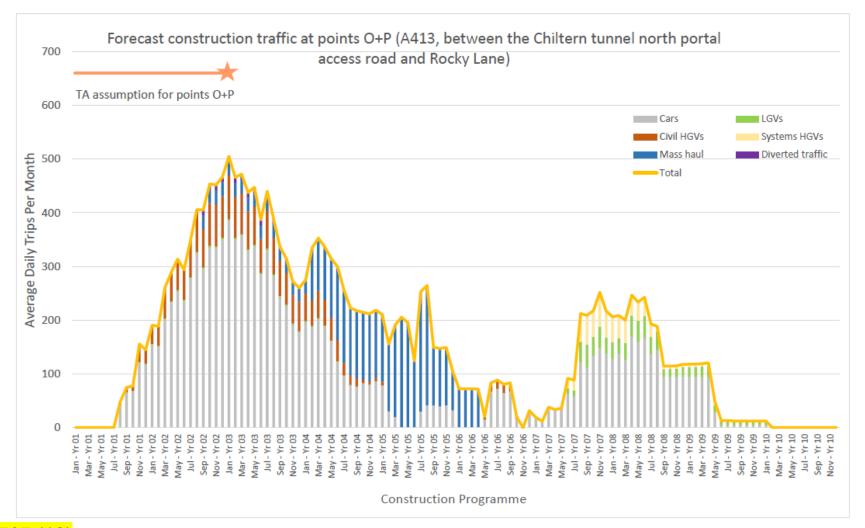
#### Construction compound routes and vehicle trip generation (1)



### Daily weekday traffic flows construction phase (1)



#### Construction traffic histogram (1)



P3767 (12)

### Mitigation of traffic impacts during construction (1)

It is in the Promoter's interest to reduce delays and congestion, as this will also affect HS2 construction traffic.

HS2 has used physical measures to mitigate construction traffic impacts:

- road closures have been avoided by the use of off-line replacements, where practical and necessary, in locations where the HS2 railway crosses existing infrastructure
- use of the HS2 railway trace as a haul road in non-tunnelled areas, where practical
- specific highway improvements at junctions to reduce congestion and delays
- specific highway improvements to address existing road safety issues
- proposed temporary highway measures (eg temporary slip roads from M25 to Colne Valley compounds)



### Mitigation of traffic impacts during construction (2)

Operational measures to mitigate construction traffic impacts include:

- use of routes with the most direct access to the strategic road network, where practicable, and approval of routes for large good vehicles by the local highway authority
- Provision of specific assurances, where necessary, to limit construction traffic flows in specific locations
- provision of overnight workforce accommodation at the main construction compounds, where appropriate
- traffic management arrangements, as identified in the draft CoCP including:
  - Local Traffic Management Plans (LTMPs)
  - implementation of site specific measures
  - workforce travel plans



### Local Traffic Management Plans (LTMPs)

A draft Route-Wide Traffic Management Plan (RTMP) has been produced which sets out the scope for the LTMPs – it has been developed in consultation with highway authorities, within the Highways Sub Group of the HS2 Planning Forum.

The draft RTMP includes 'Construction Logistics and Cycle Safety (CLOCS)' standards for driver and vehicle safety, to manage work related road risk for vulnerable road users (cyclist and pedestrians) and the 'Freight Operation Registration Scheme (FORS)', where operators are subject to audit to ensure that they meet a number of quality standards in fleet operations around management, operations, vehicles and drivers.

LTMPs will initially be drafted by HS2 and completed by the final contractors - they will include the proposed traffic and construction vehicle management strategy.

## Traffic Management Site Specific Measures

# Traffic Management sites specific measures as set out in the draft CoCP include:

- phasing of works
- road traffic management layouts and signage
- timing of operations
- arrangements for liaison with the relevant highway authorities and emergency services
- monitoring of vehicles arriving and leaving construction compounds
- emergency access protocols
- proposals for transport of construction workforce and measures to ensure safe access to and from site
- parking controls
- use of internal haul roads for construction vehicles to minimise the need to use public roads

- monitoring for deviation from authorised routes
- requirements relating to the movement of traffic from business and commercial operators of road vehicles, including goods vehicles
- measures for highway reinstatement
- a list of roads that may be used by construction traffic in the vicinity of the site, including any restrictions to construction traffic on these routes, such as the avoidance of large goods vehicles operating adjacent to schools during drop off and pick-up periods, where necessary



### Workforce travel plans

Construction workforce travel plans will be prepared by the lead contractors with the aim of encouraging the use of sustainable modes of transport to reduce the impact of workforce travel on local residents and businesses.

#### The plans will include:

- key issues to consider for each compound/ construction site or group of sites
- site activities and surrounding transport network including relevant context plans
- anticipated workforce trip generation and how it may change during the construction process
- travel mitigation measures that will be introduced to reduce the impact of construction workforce on the transport network
- targets to reduce individual car journeys for the construction workers



### Further engagement

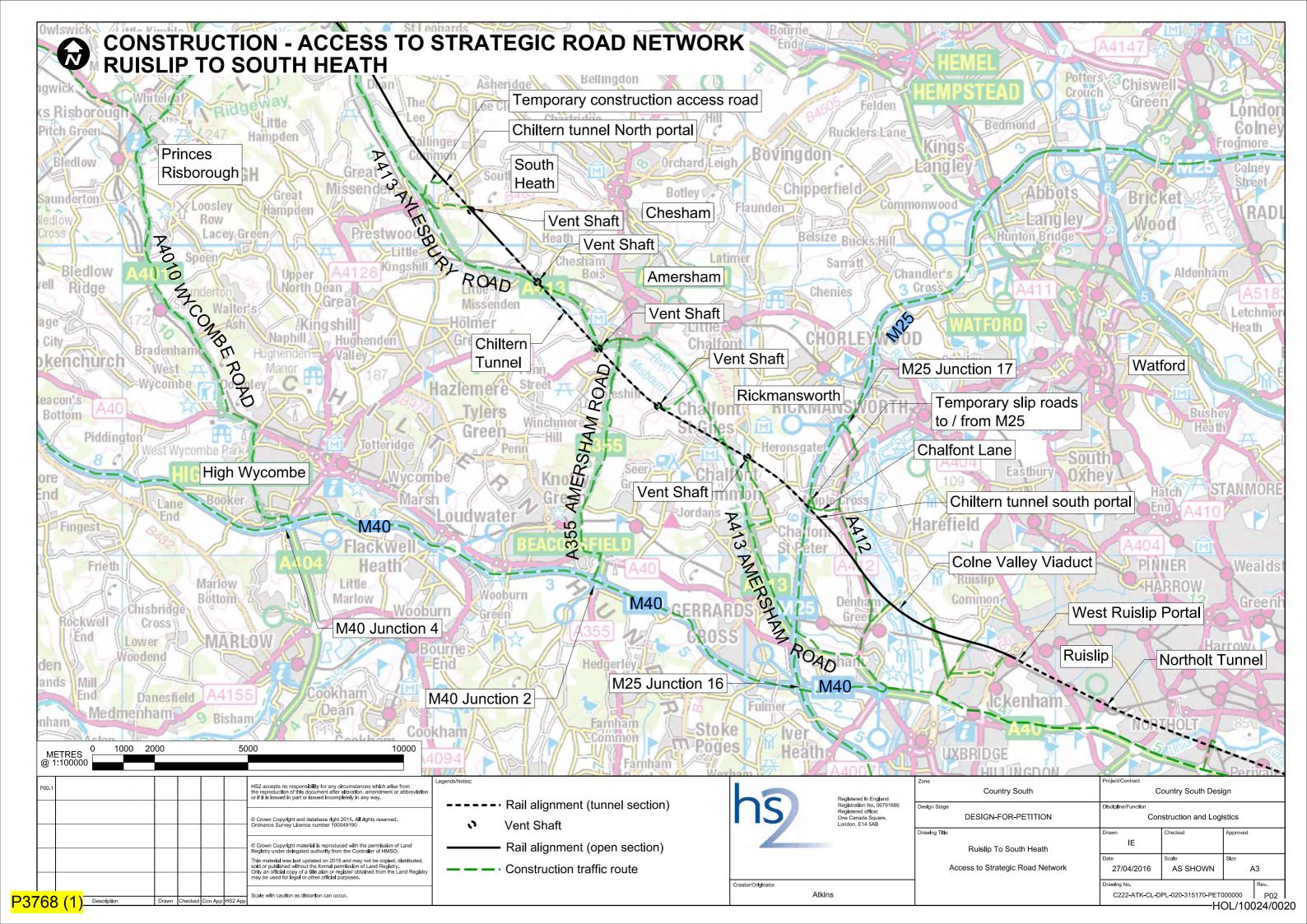
Prior to commencement of main construction works, and during the construction phase, regular local Traffic Liaison Group (TLG) meetings will be established with local highway authorities so that matters such as local traffic management schemes can be reviewed prior to submission, or approval, and the implementation of schemes reviewed and other monitoring reported.

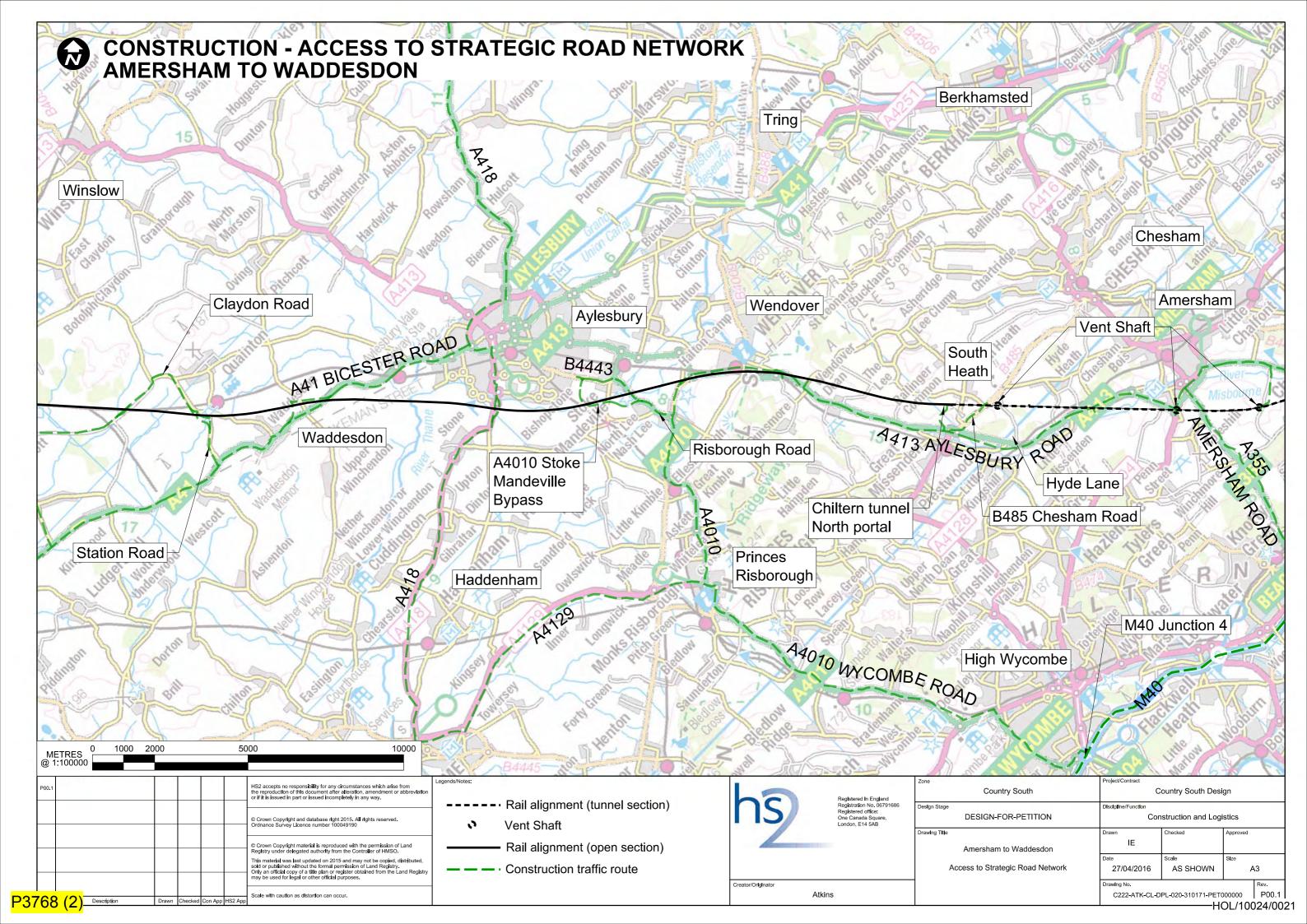
Proposed attendees at the TLG meetings include HS2 traffic manager, relevant local highway authority, the police and local bus operator representative.

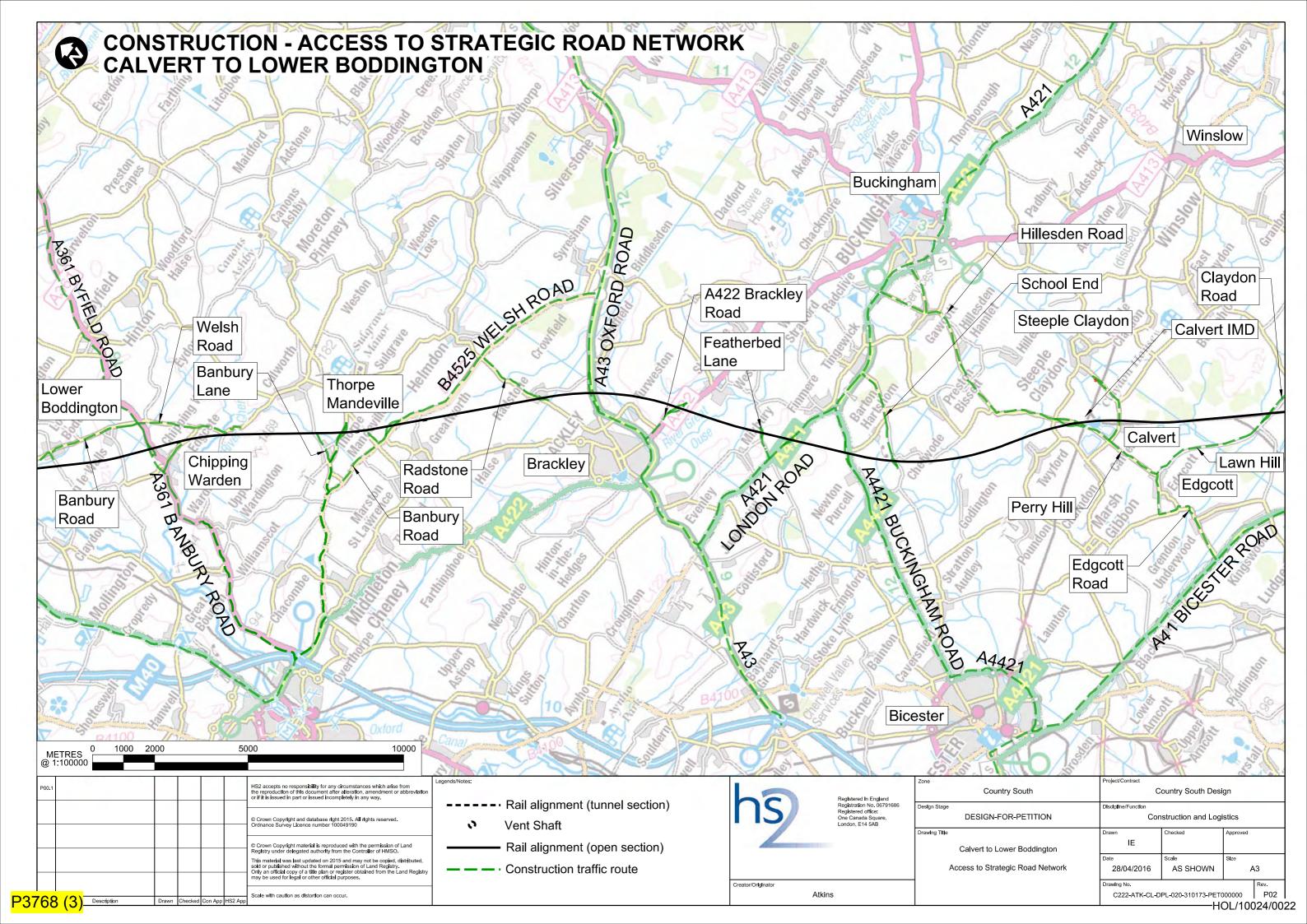
HS2 Ltd has liaised with stakeholders, where further work is required eg:

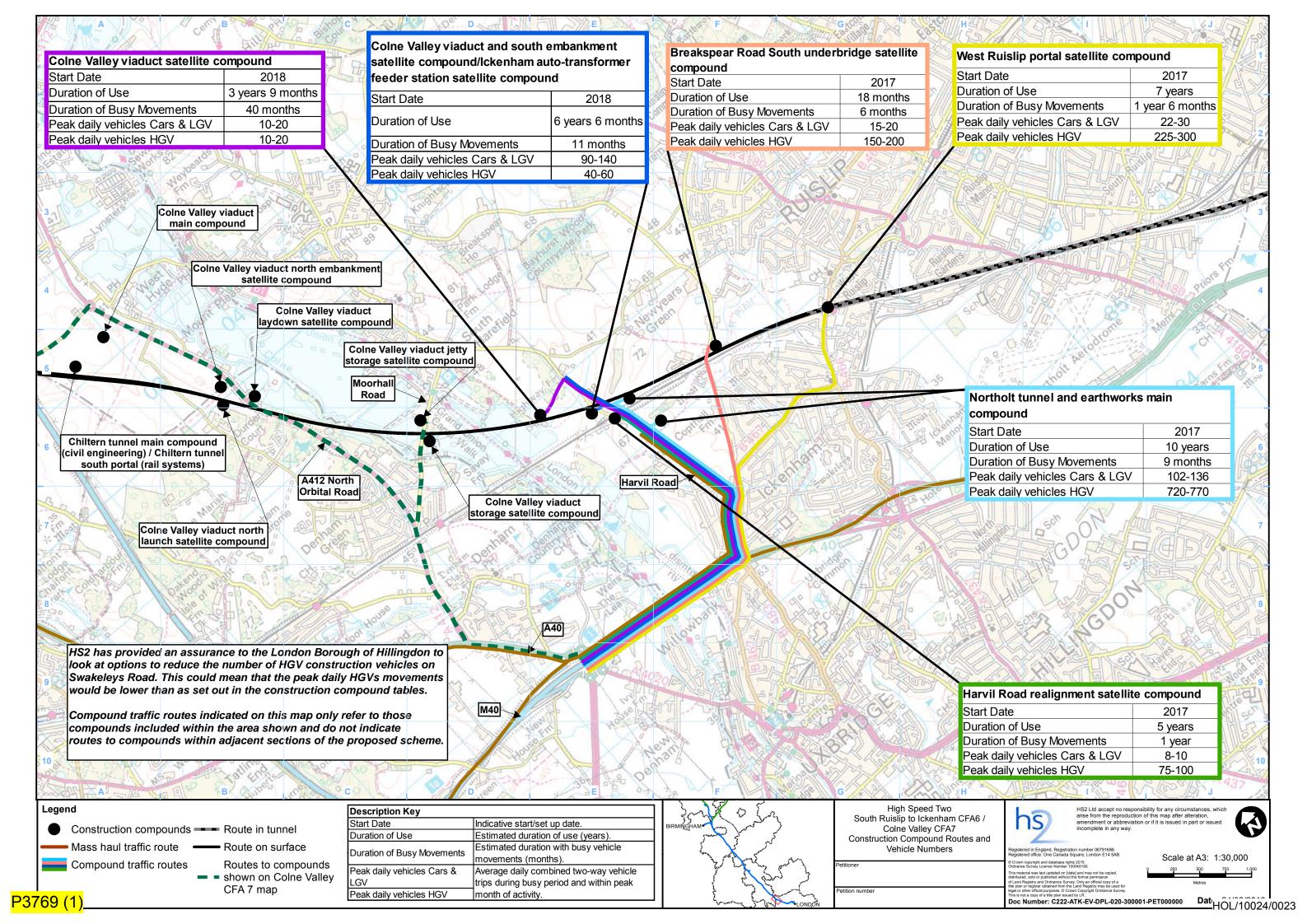
- Saltley Viaduct Strategy, Birmingham
- A46/ Á452 assessment, Warwickshire
- A413 access road, Great Missenden
- Ickenham study, Hillingdon

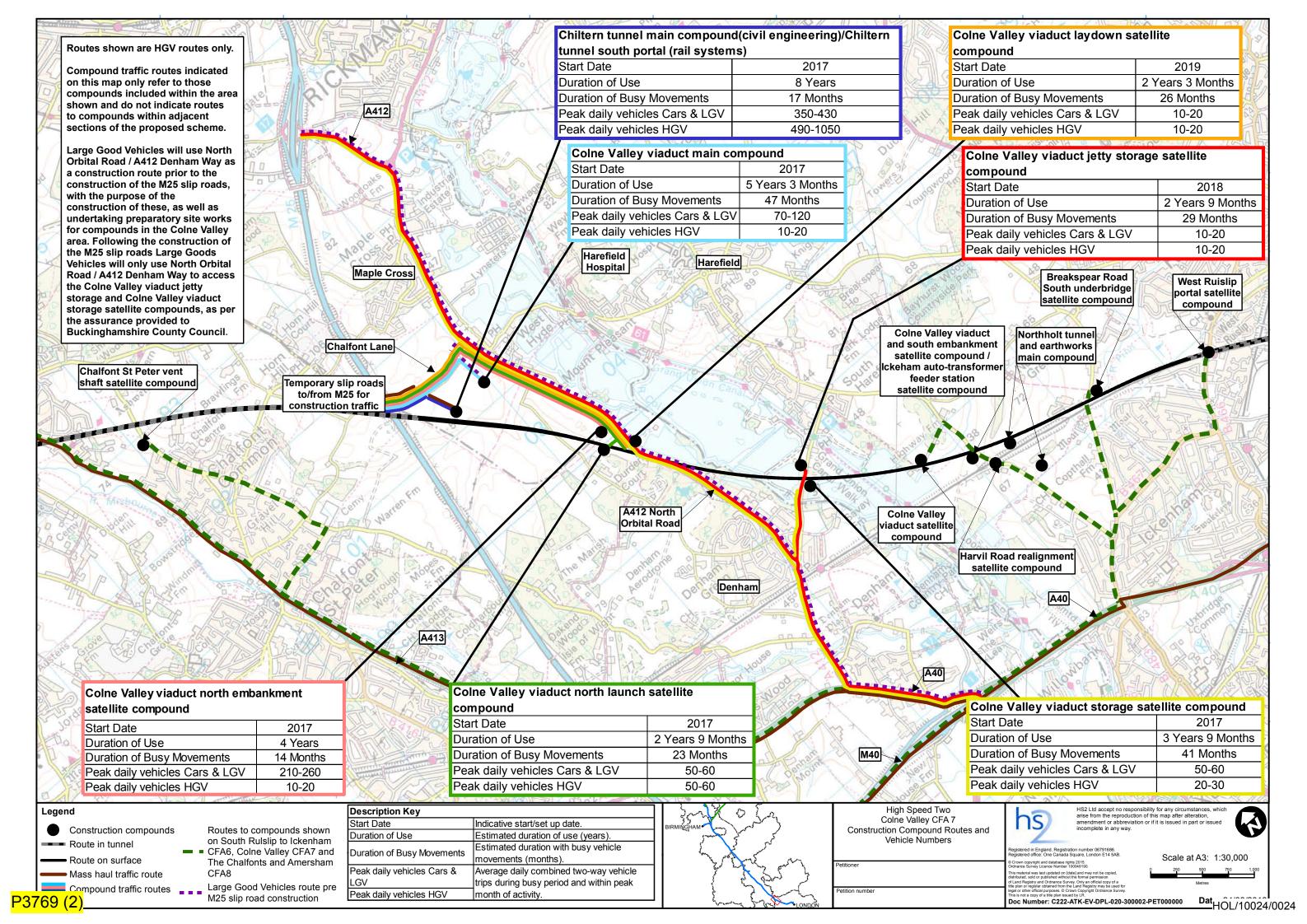


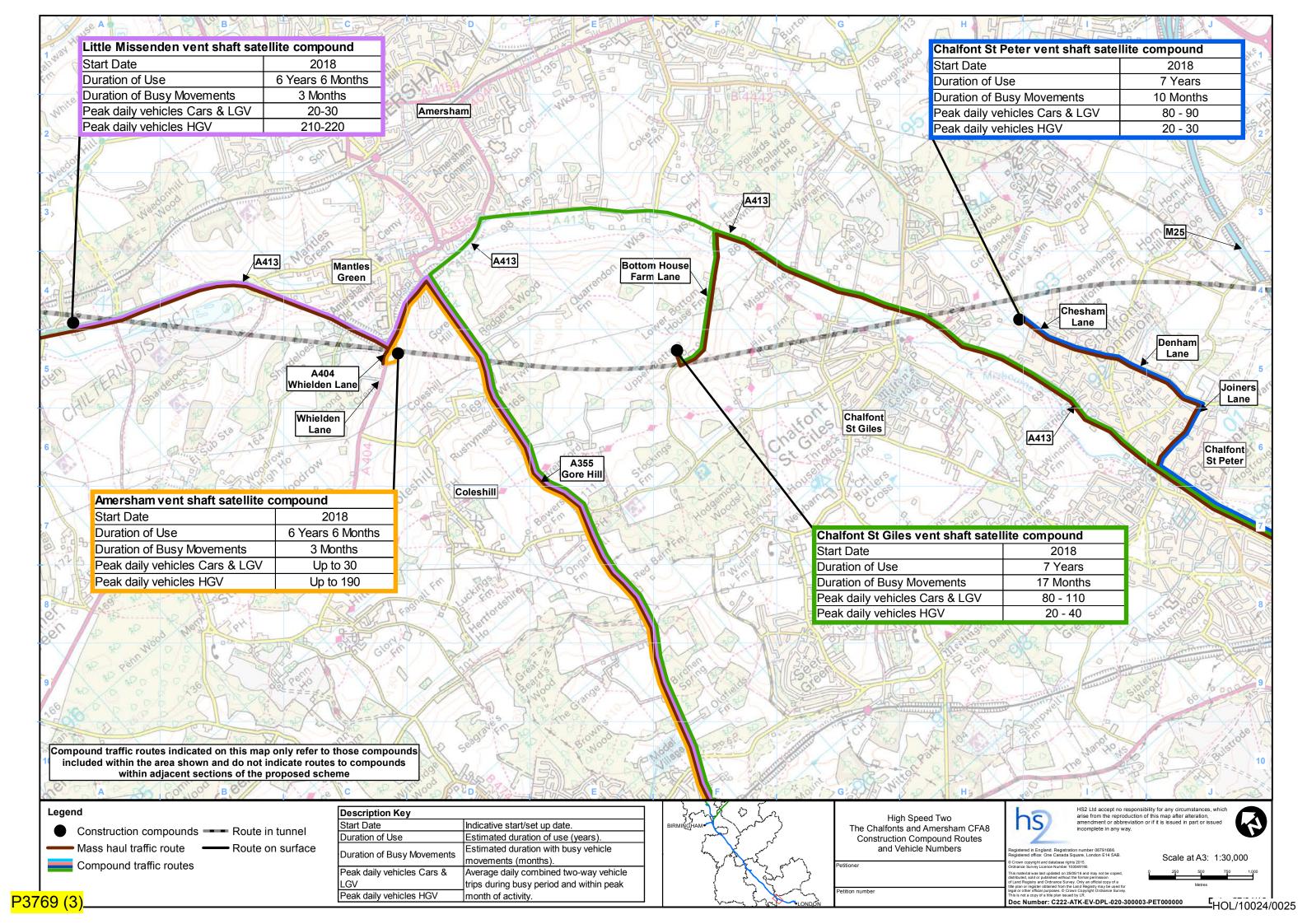


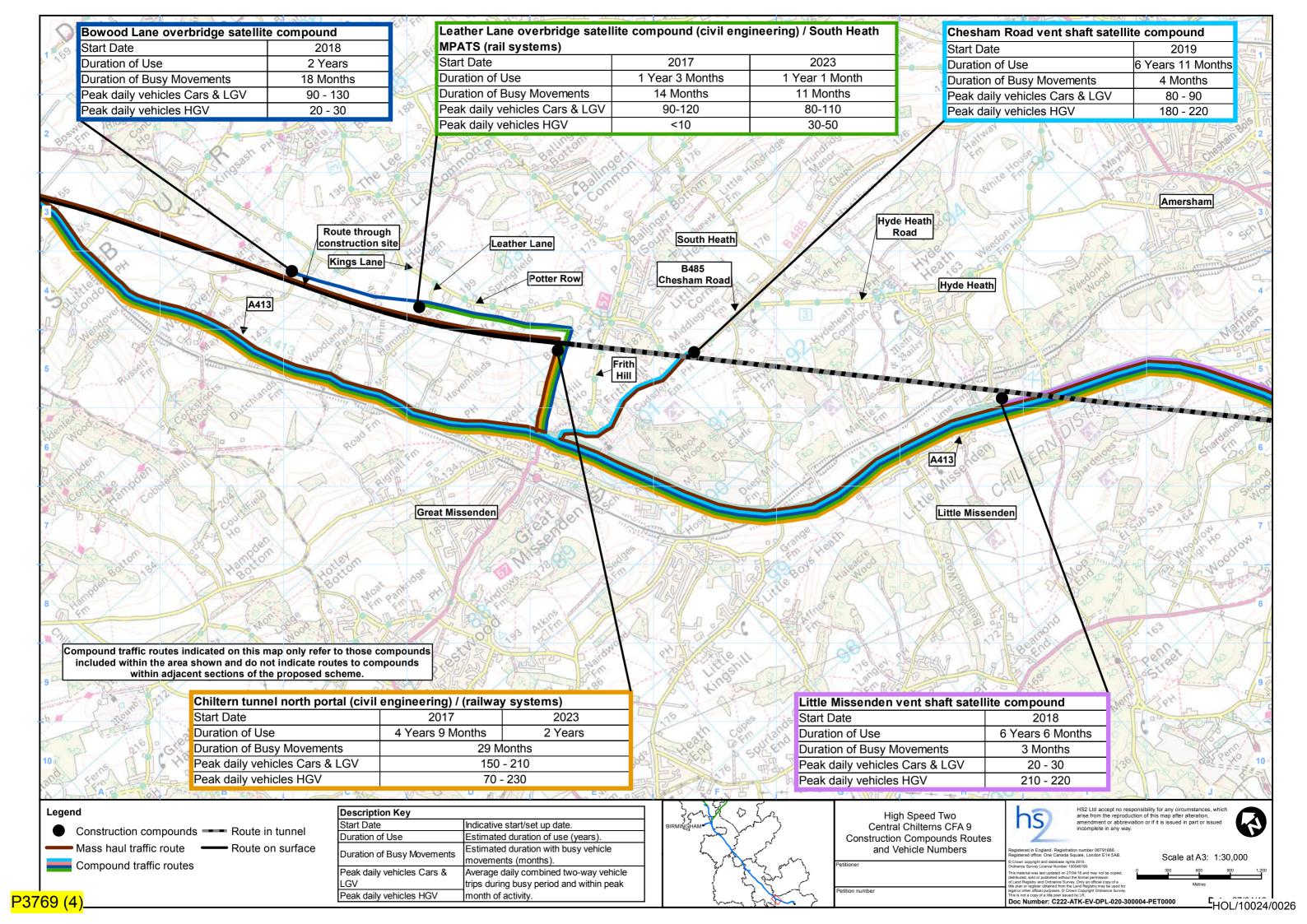


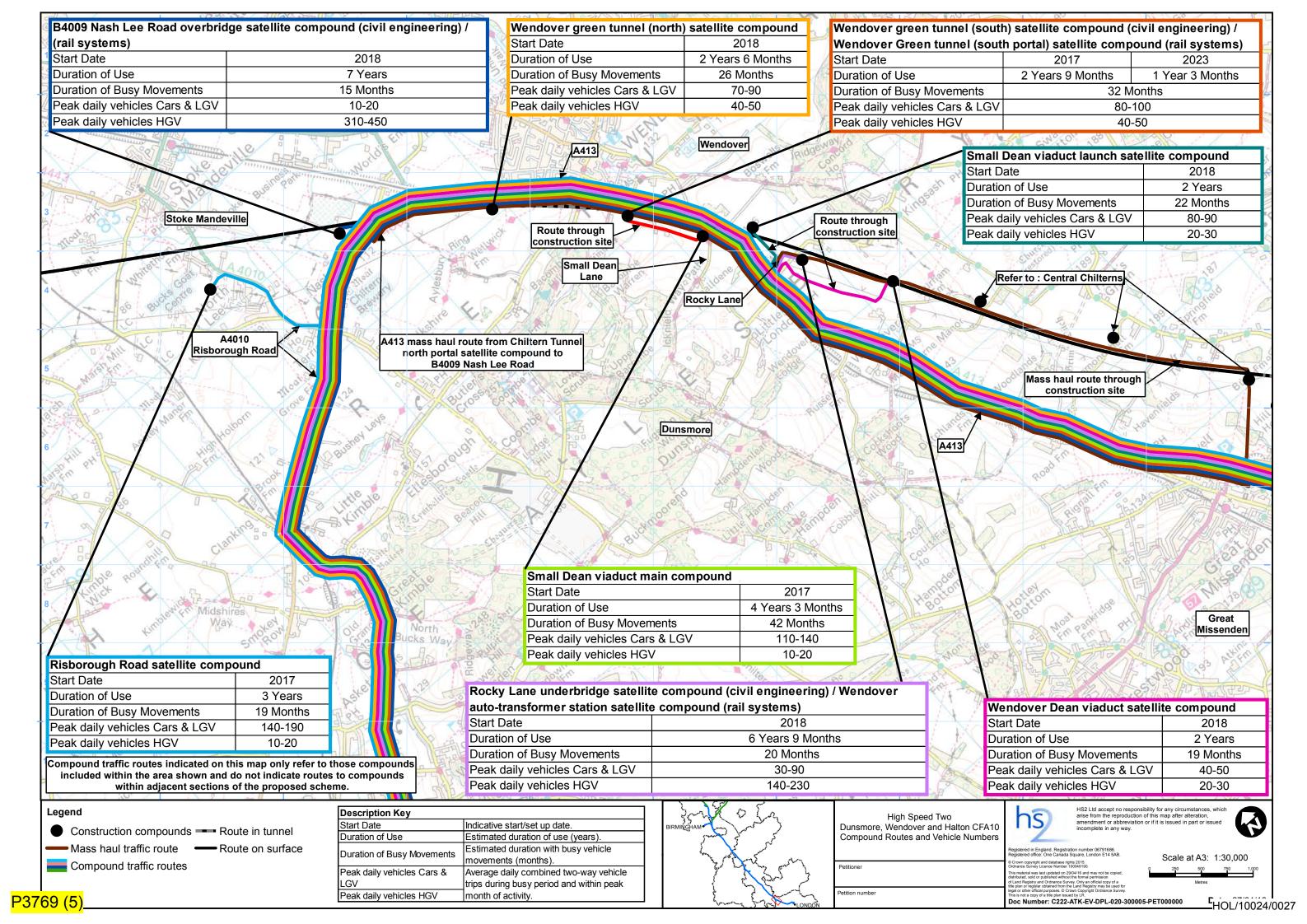


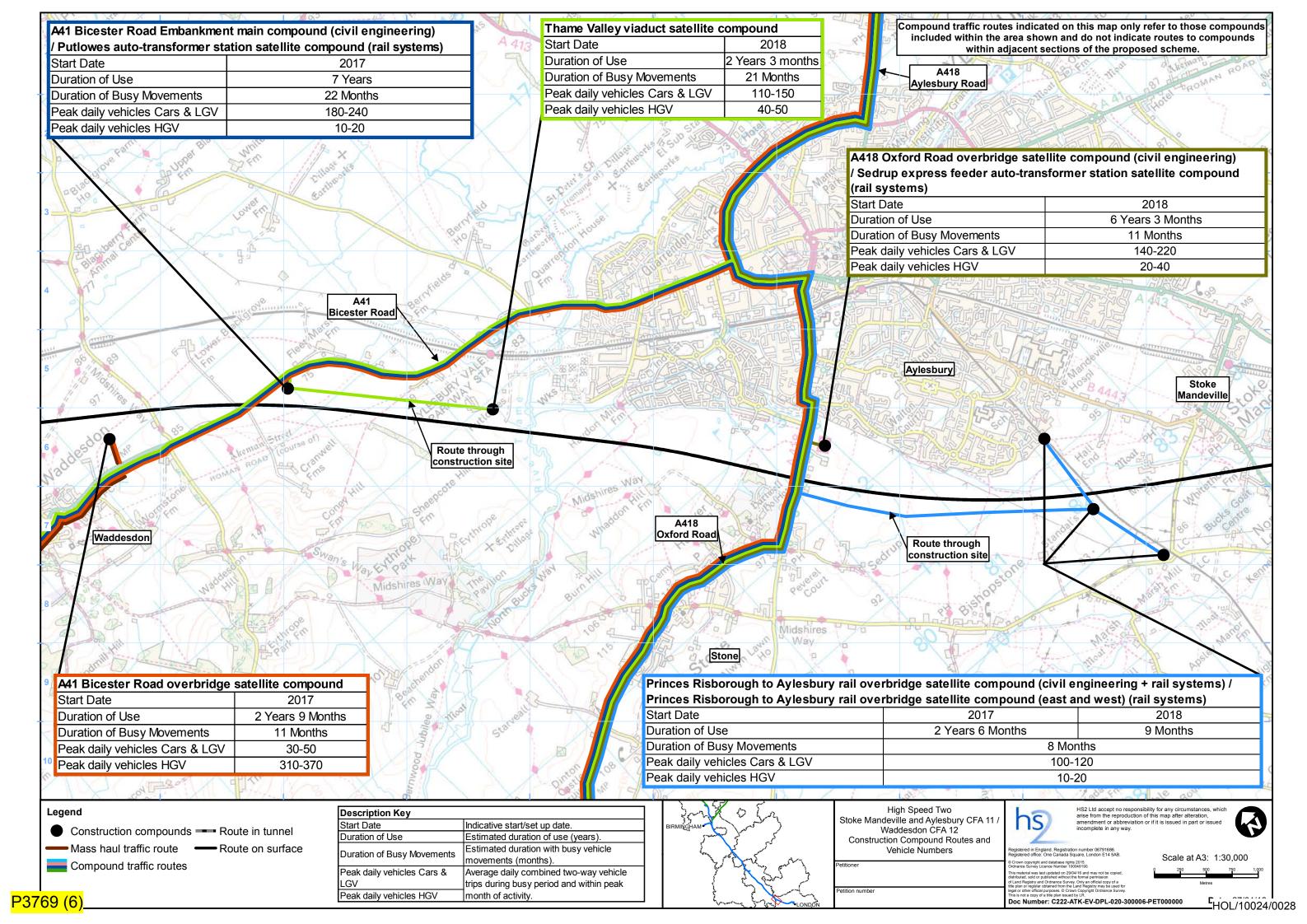


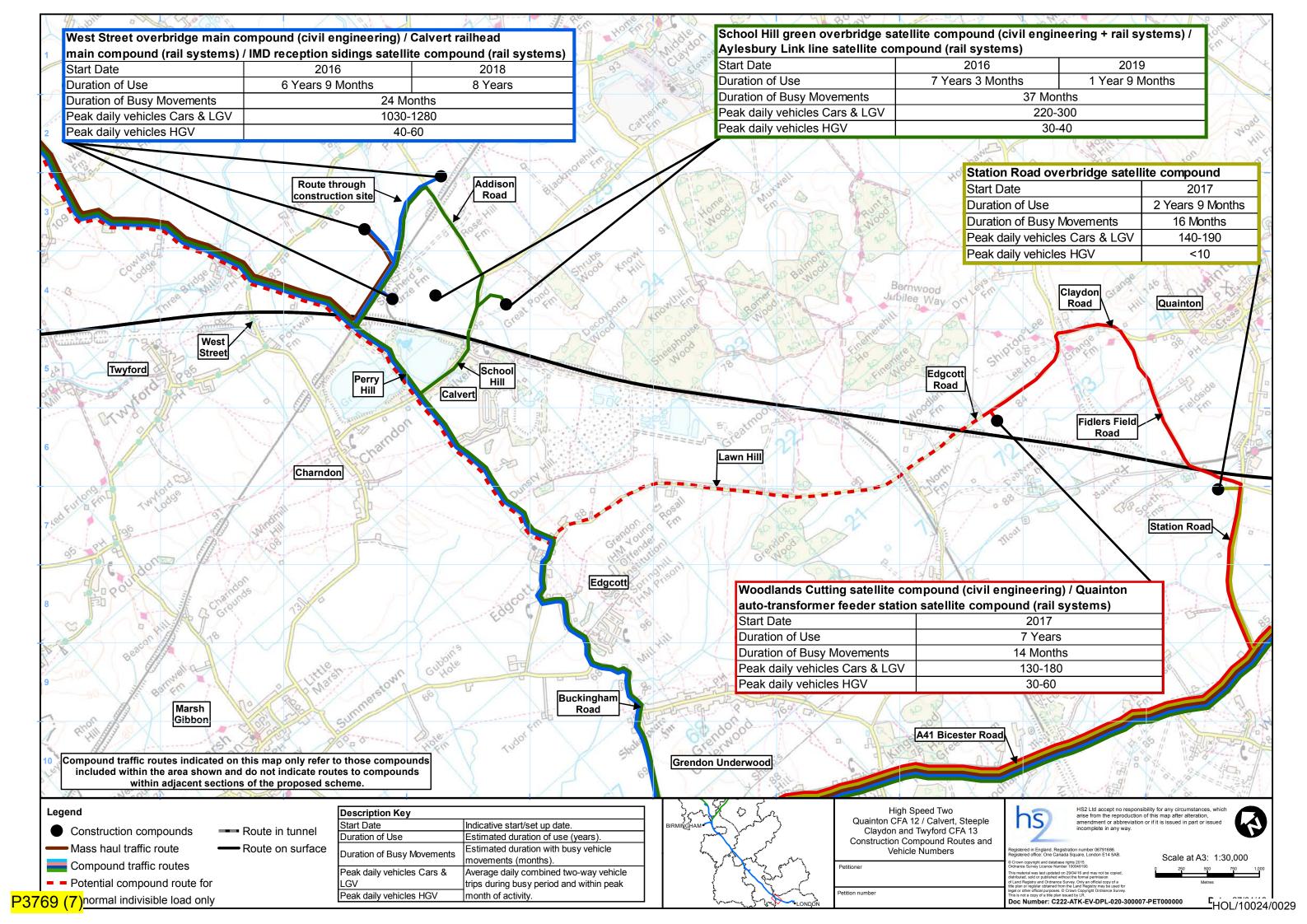


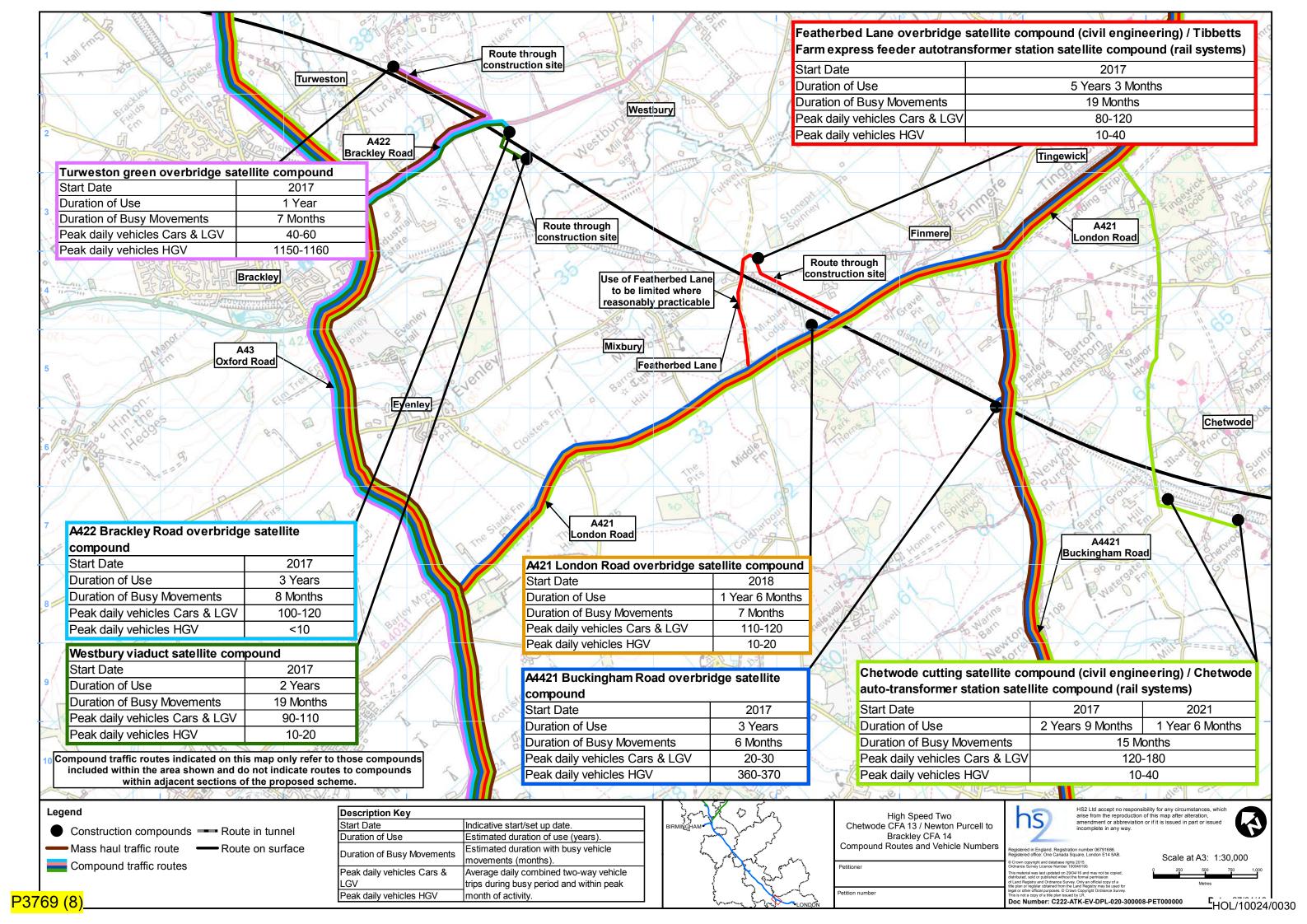


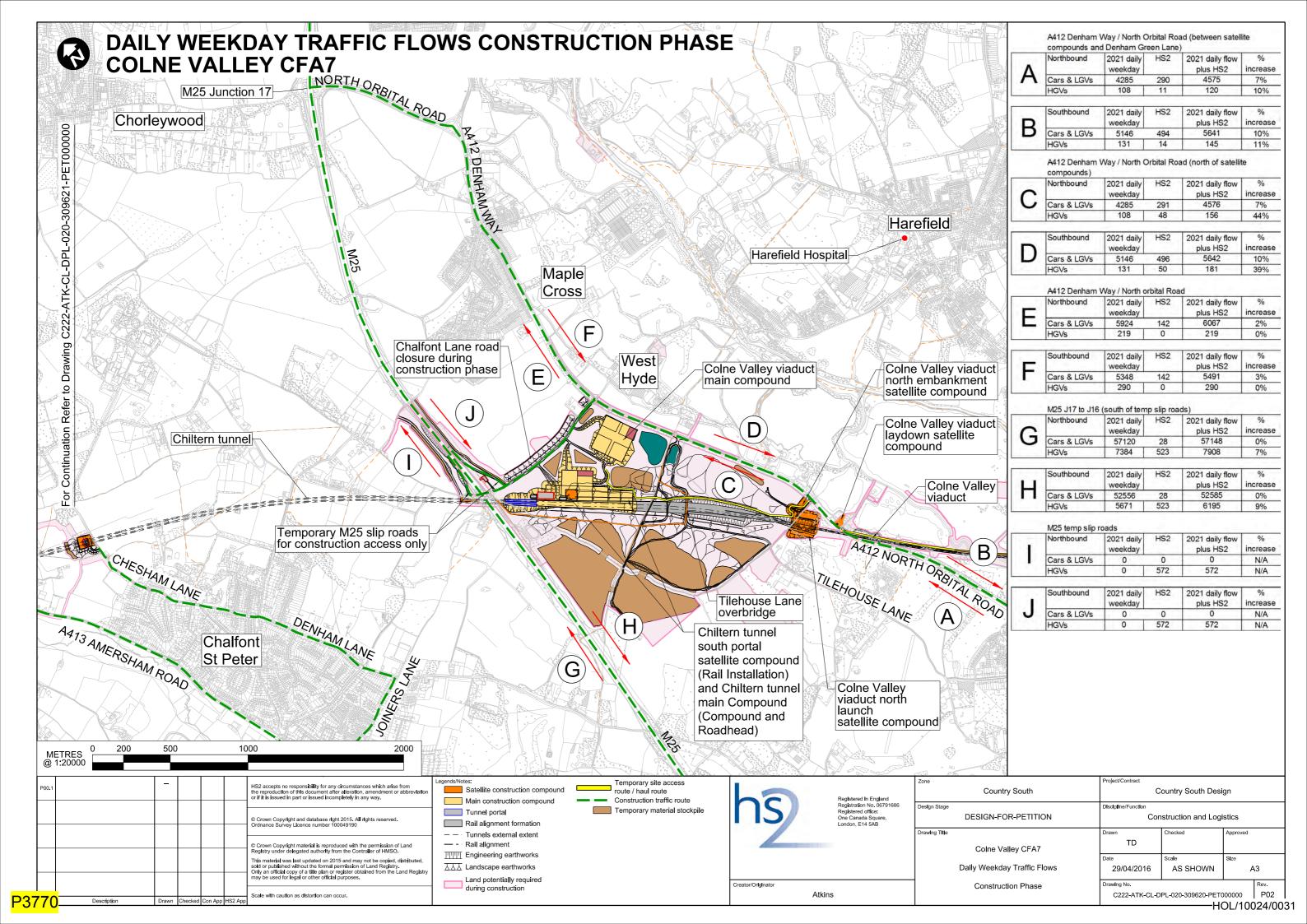


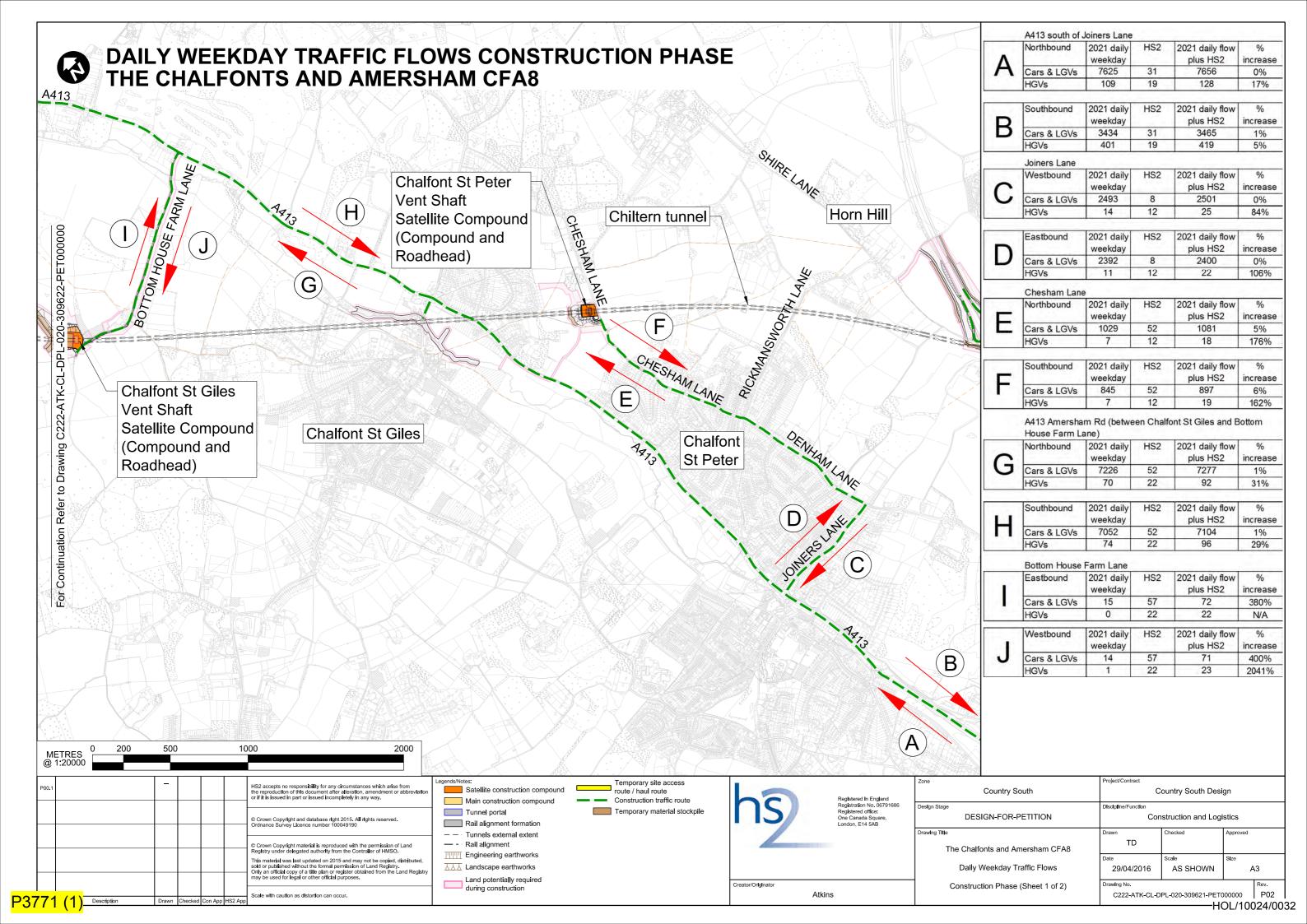


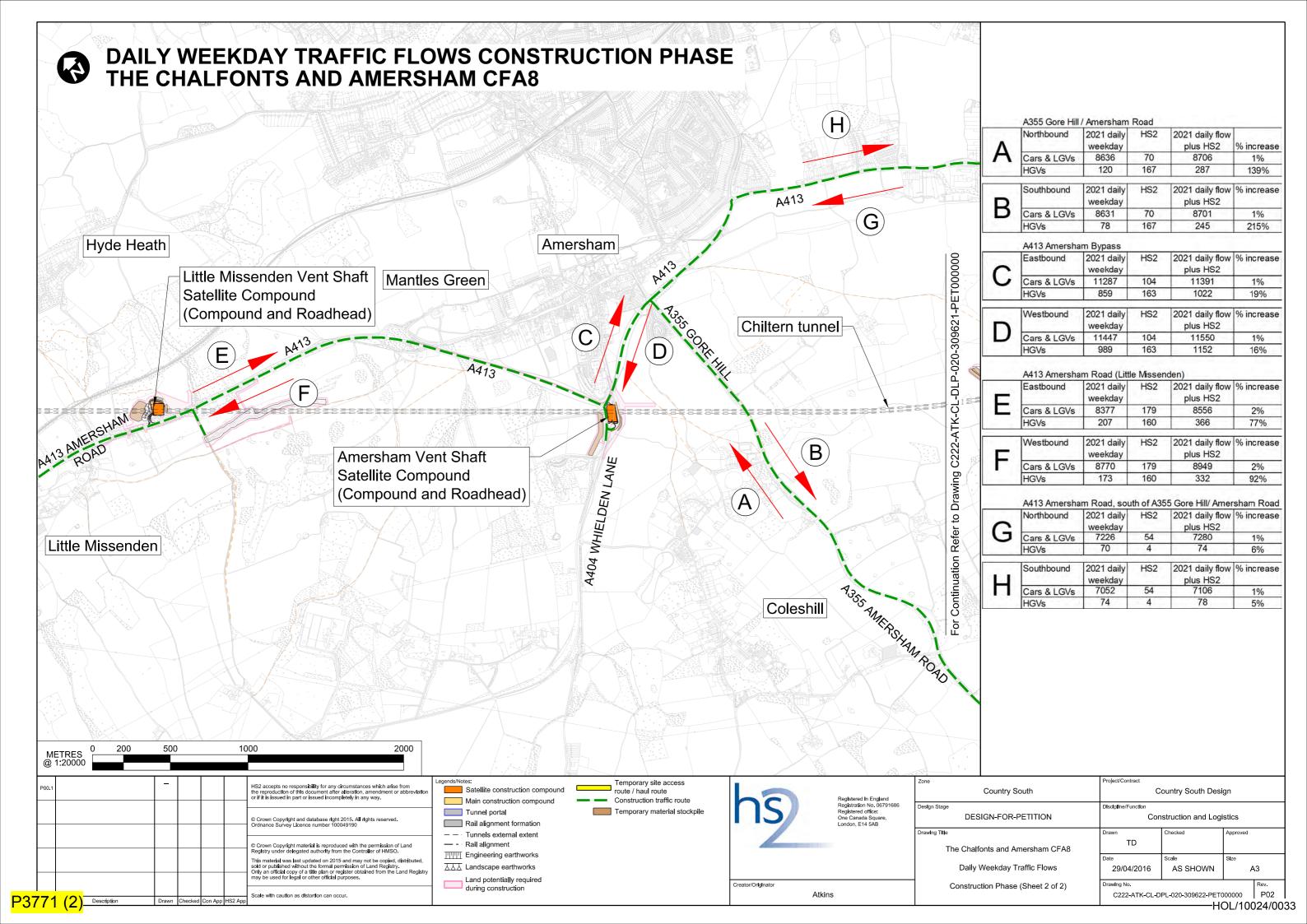


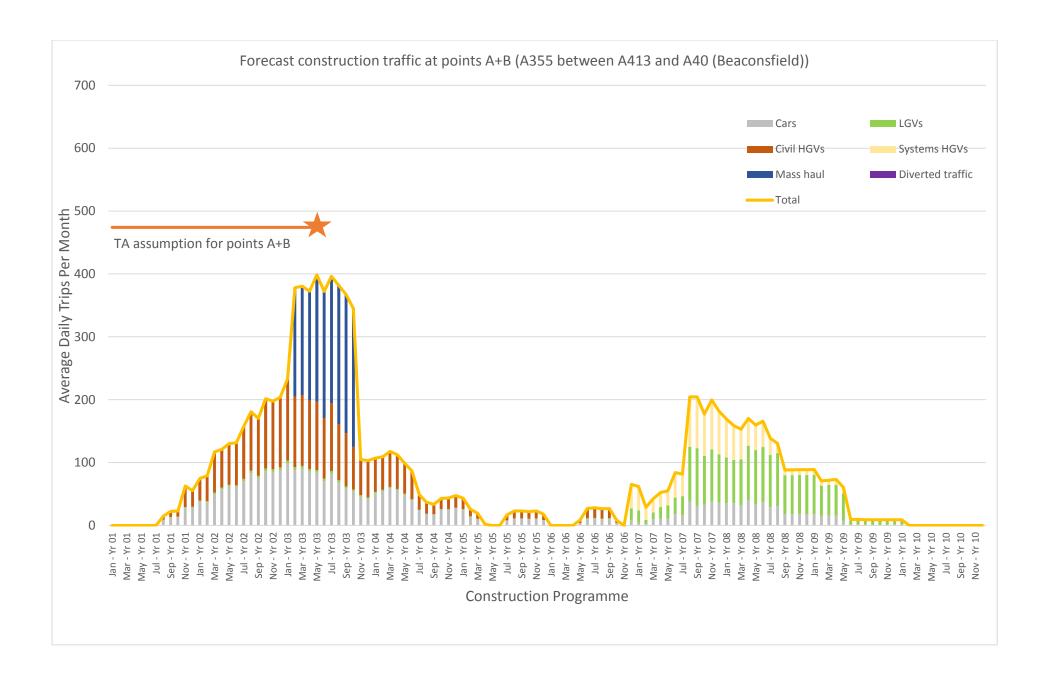


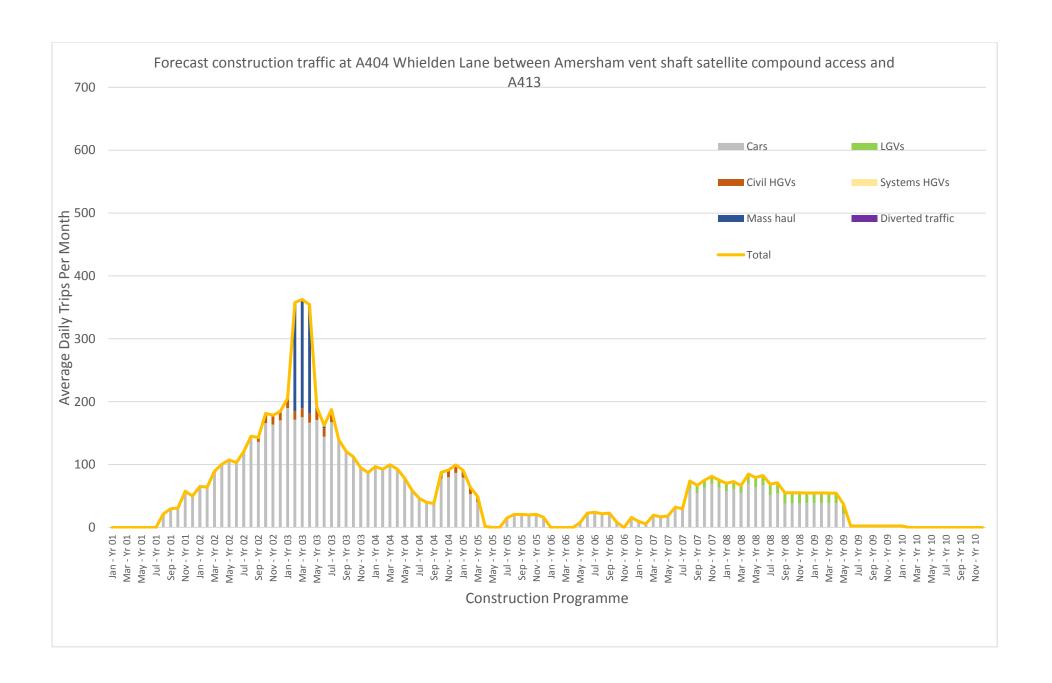


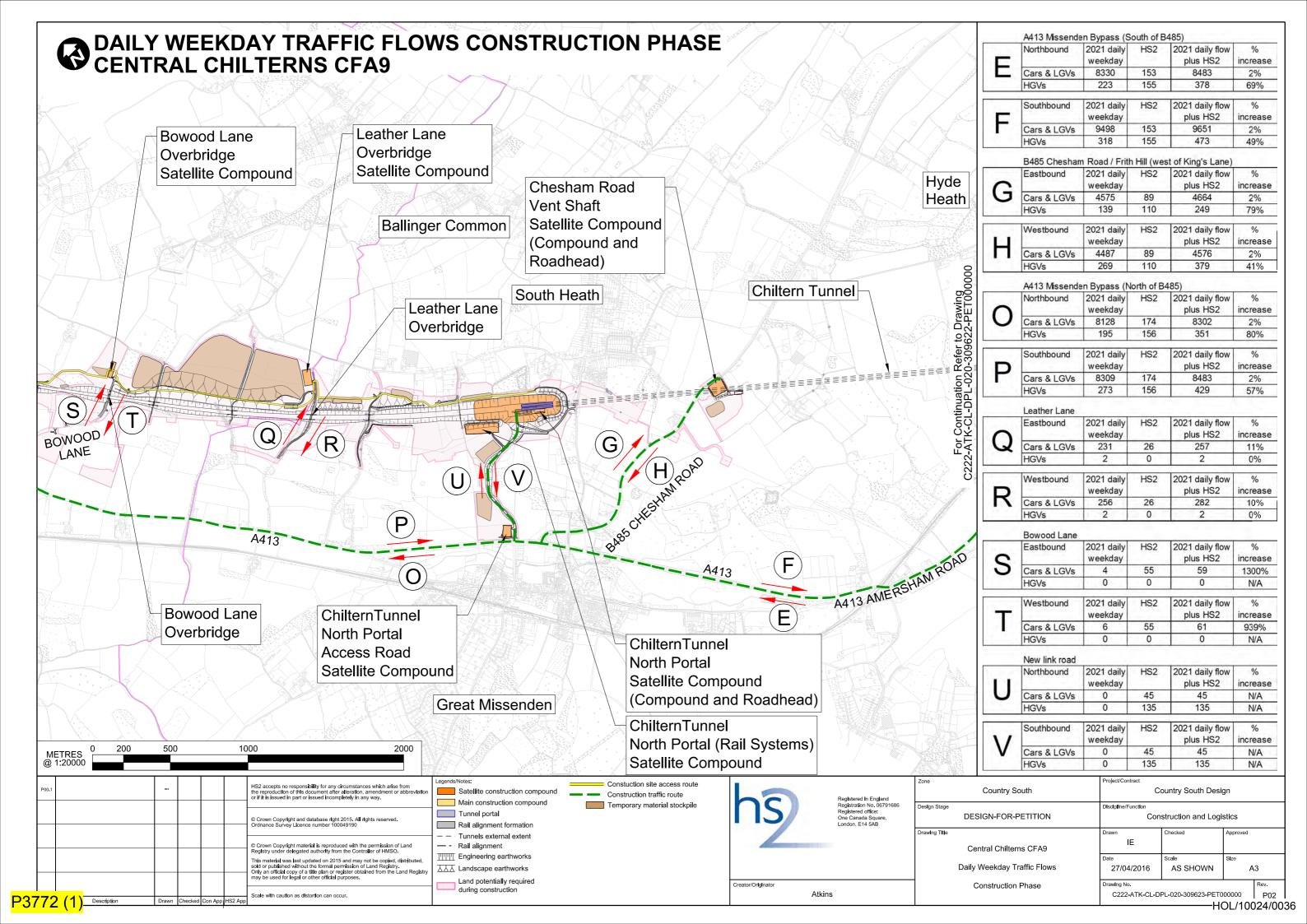


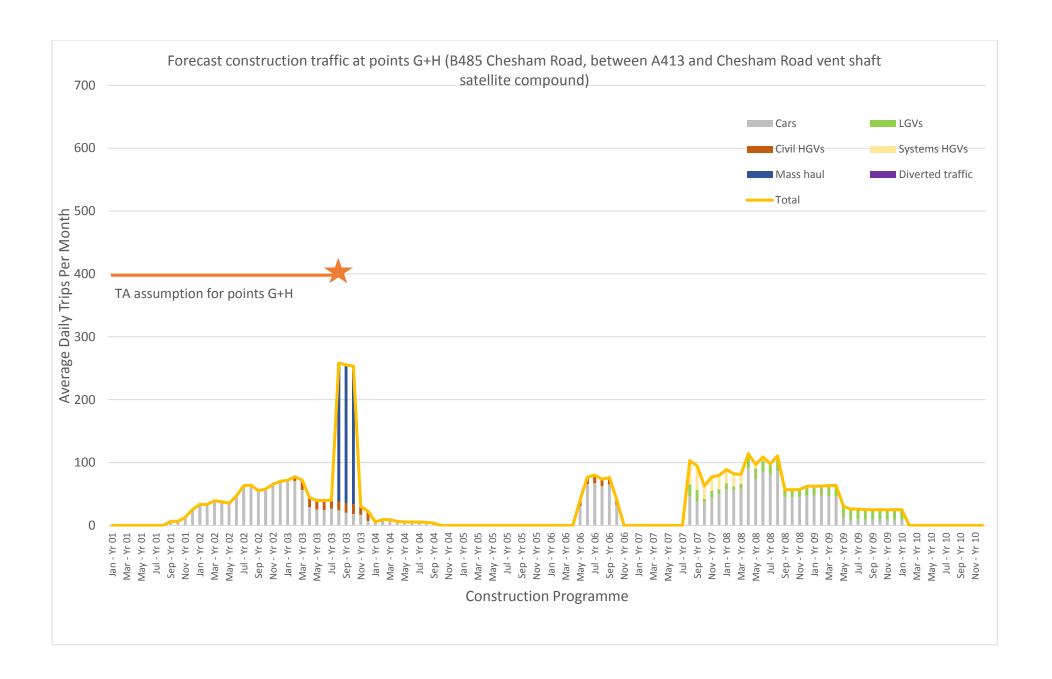


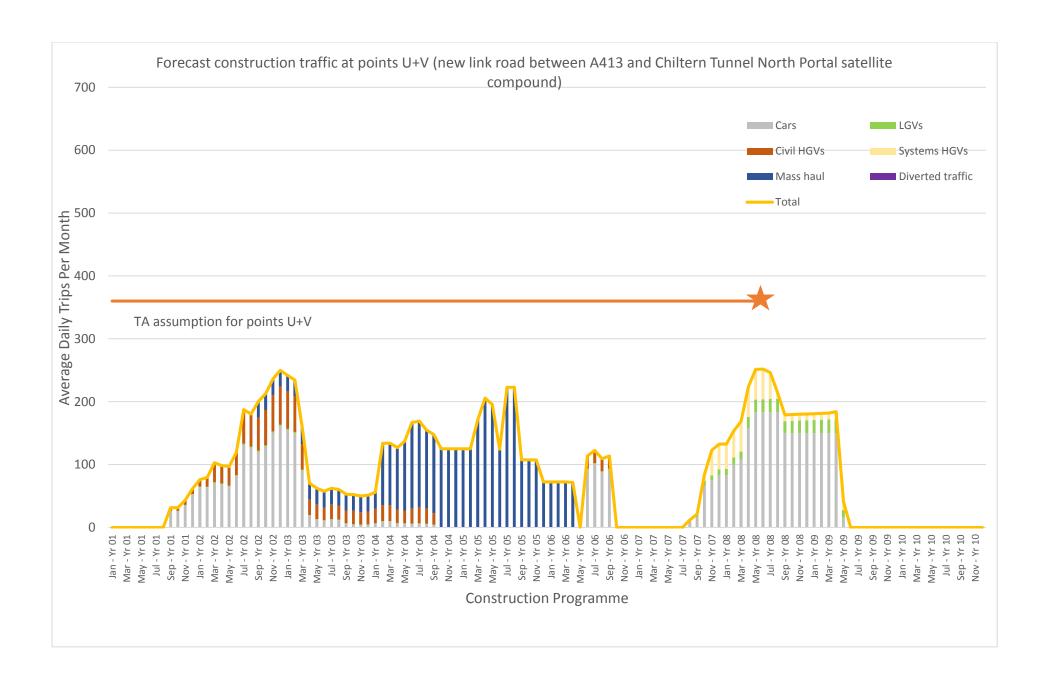


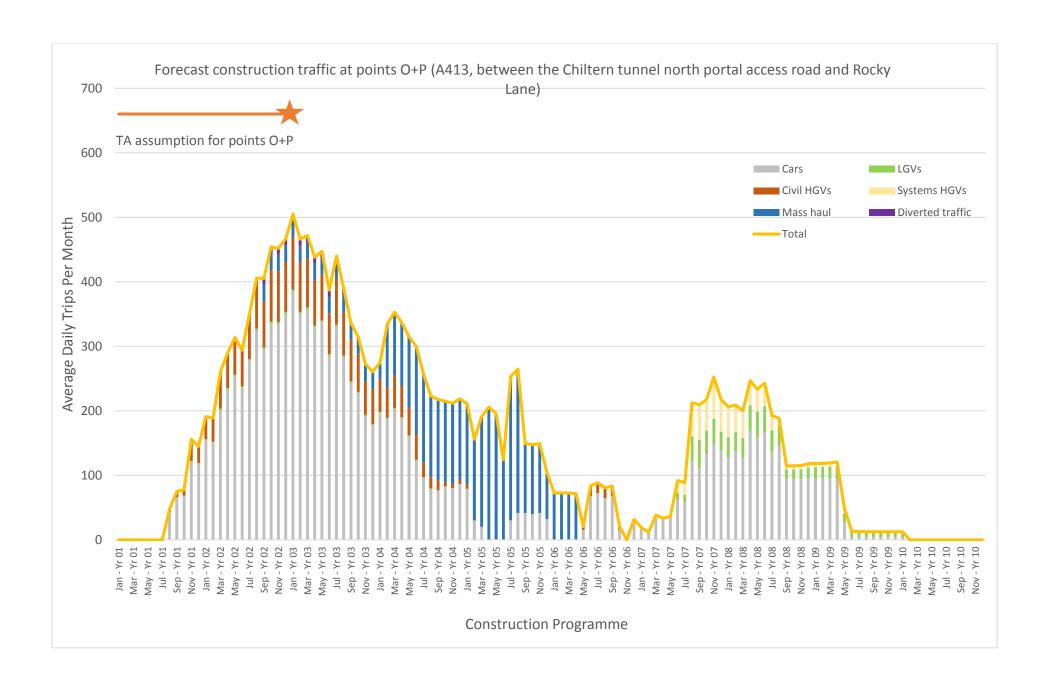


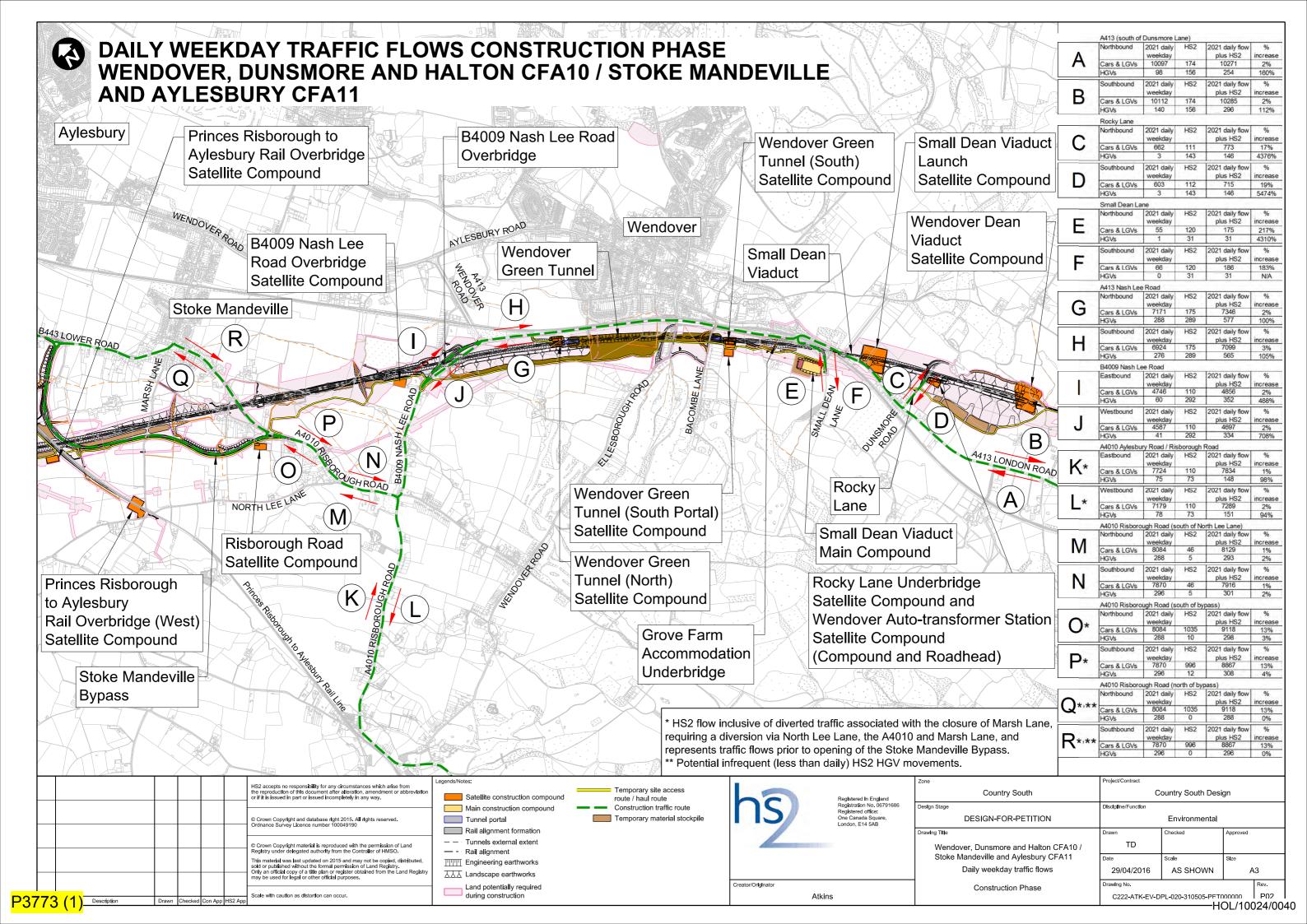


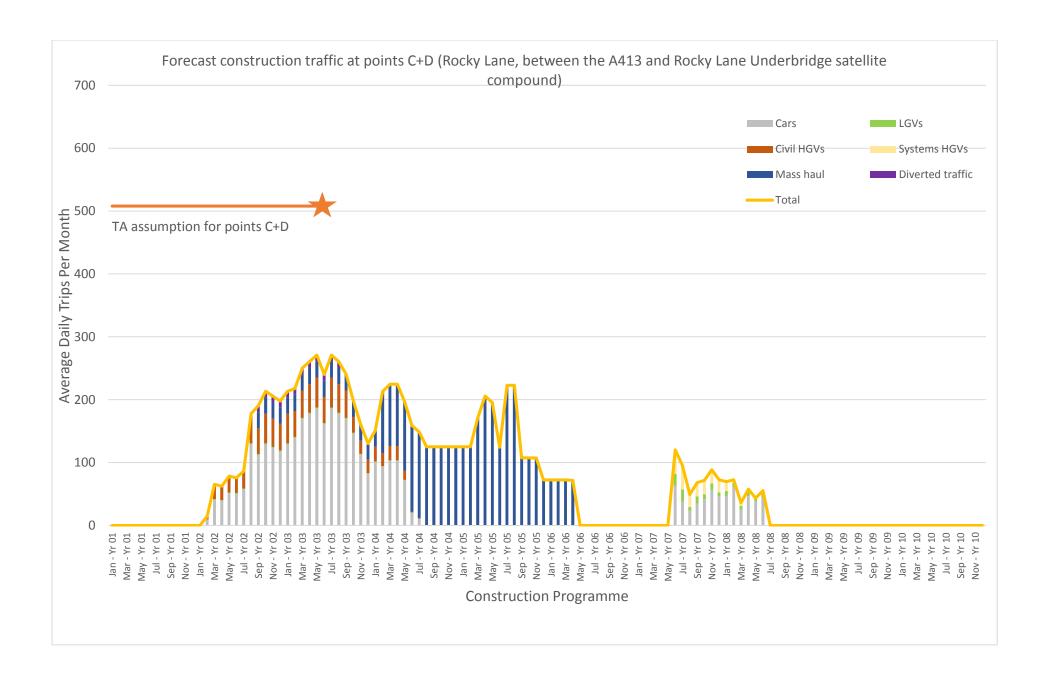


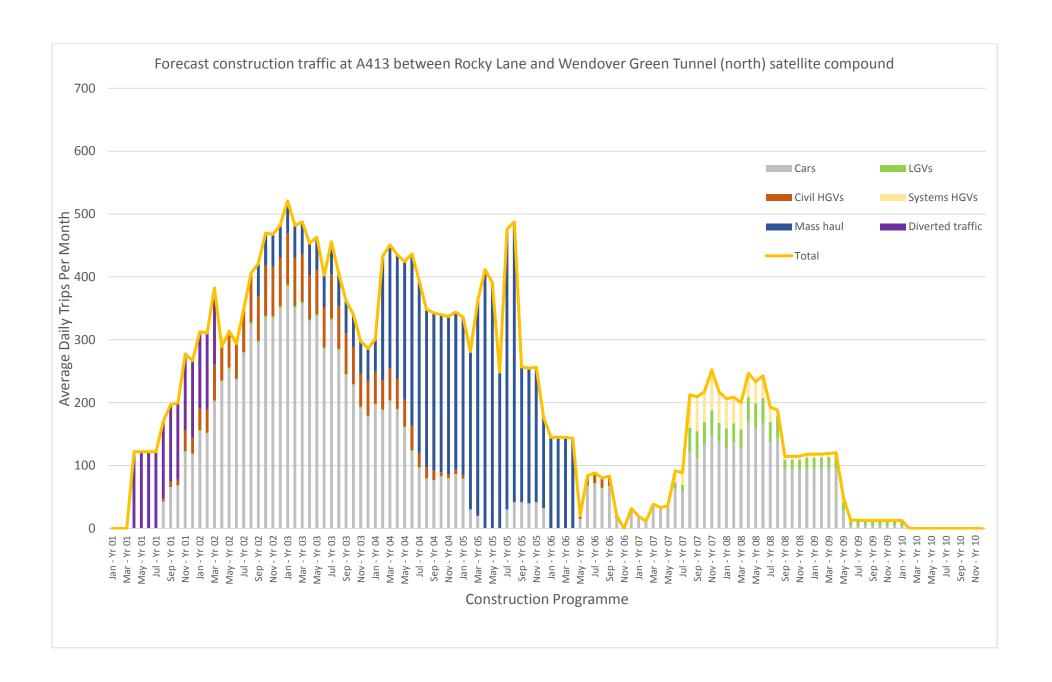


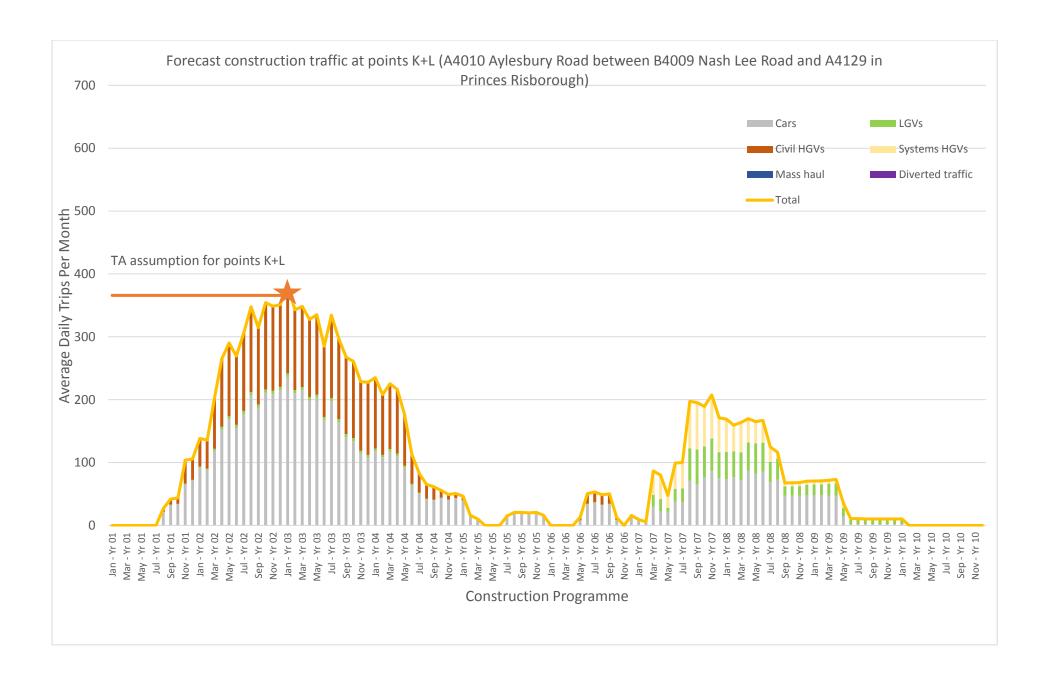


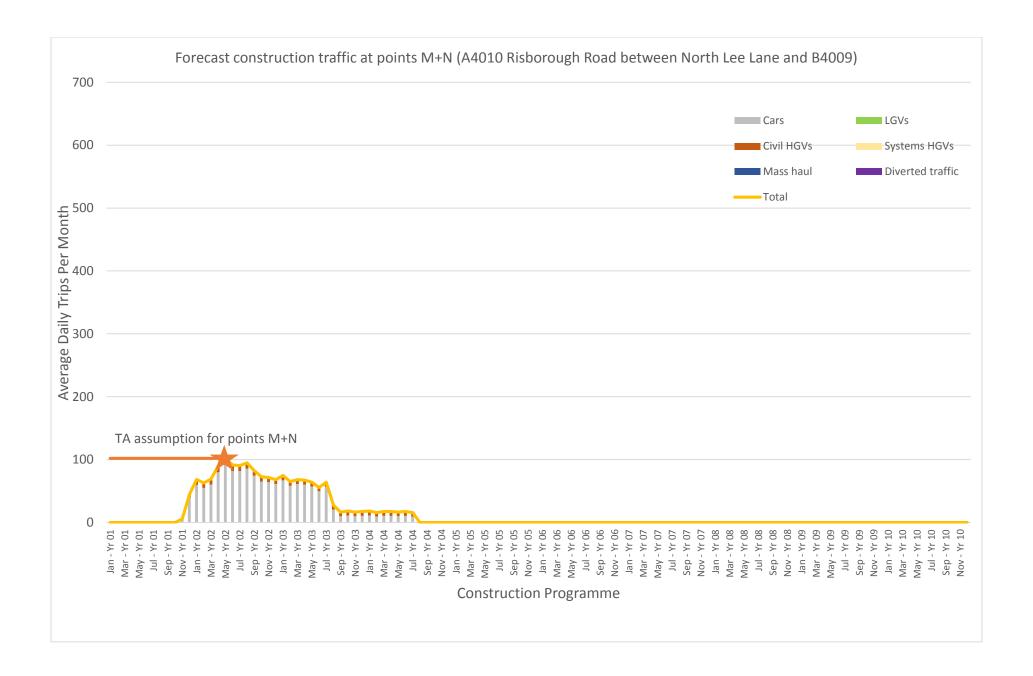


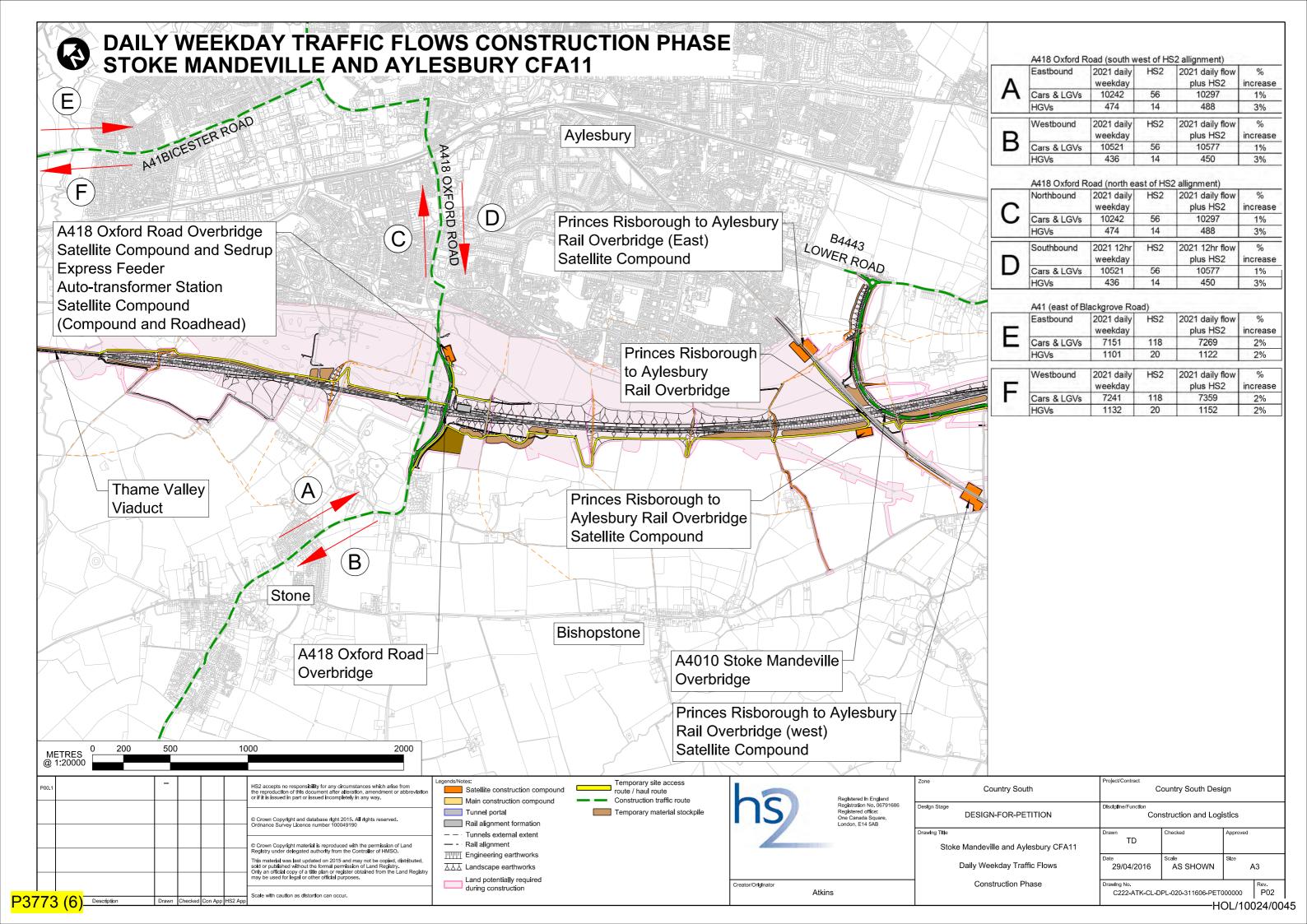


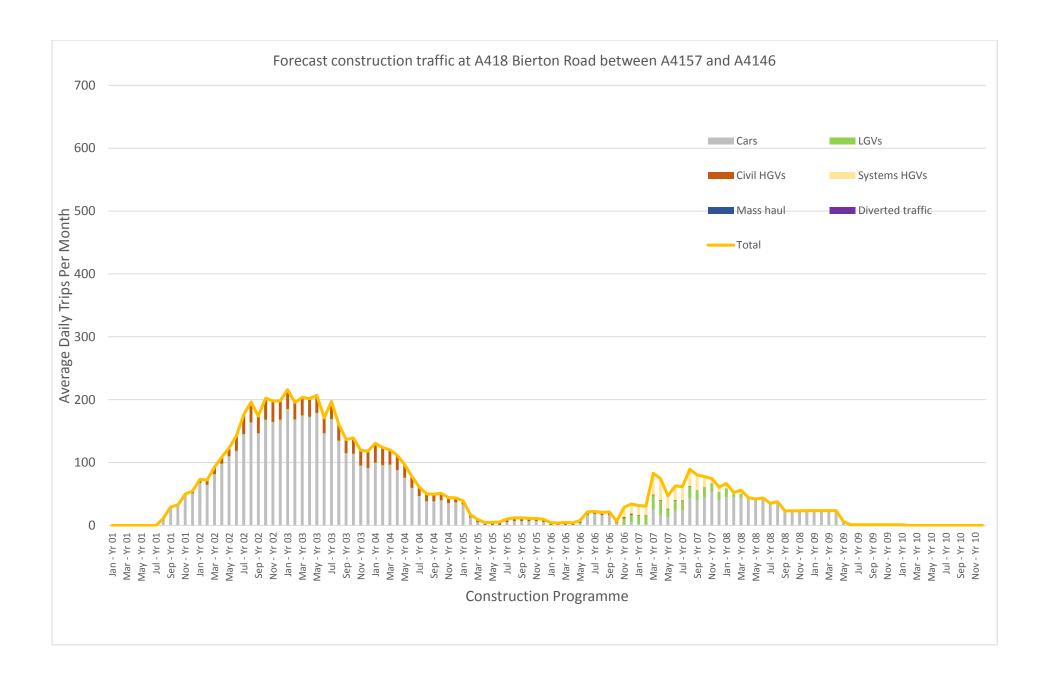


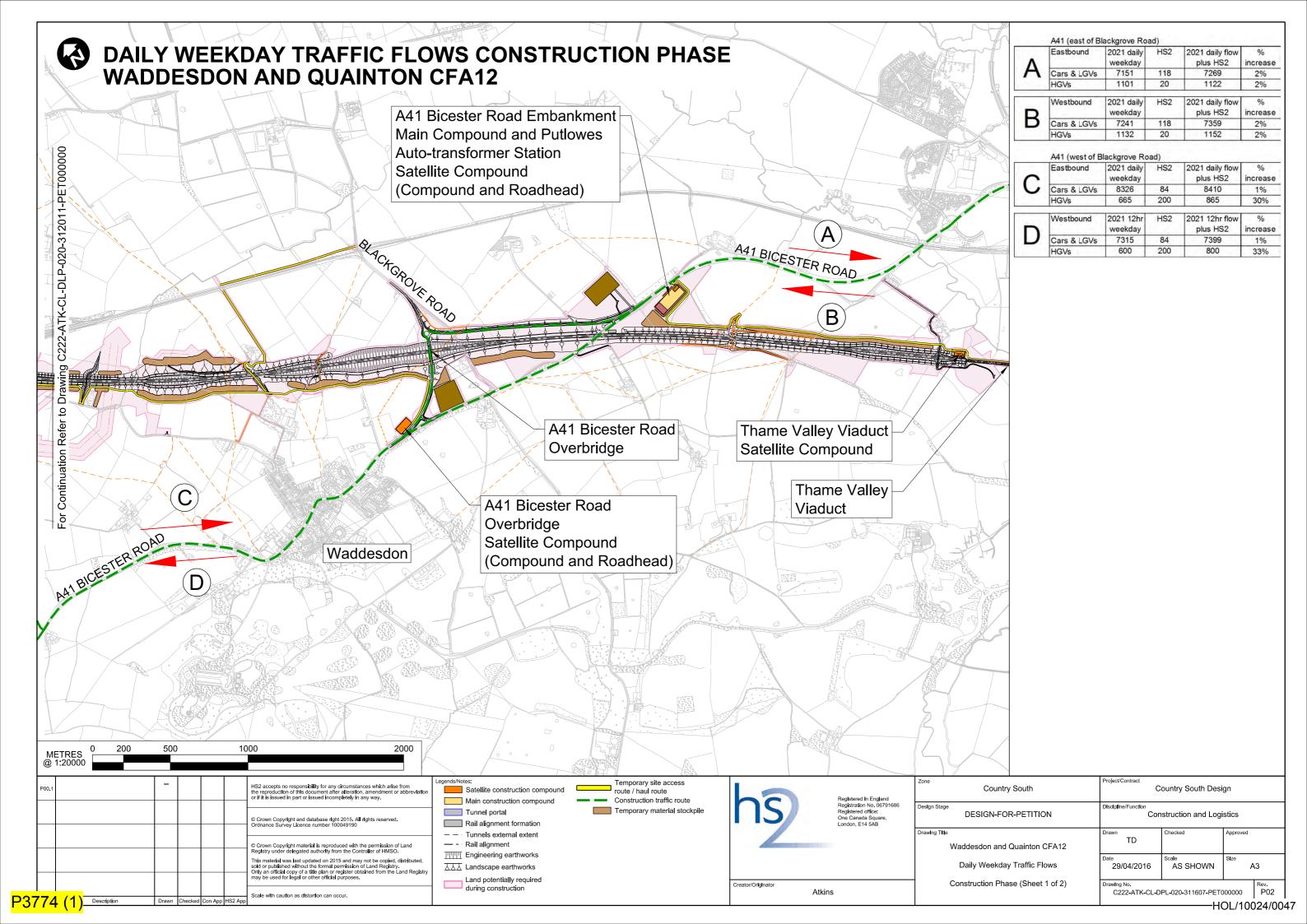


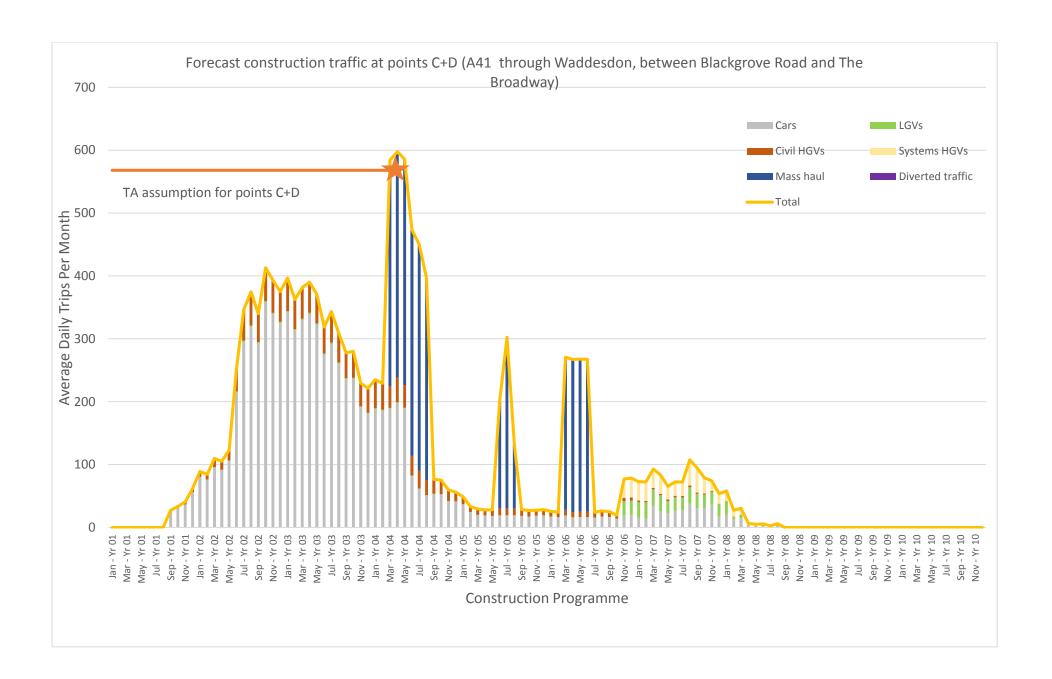


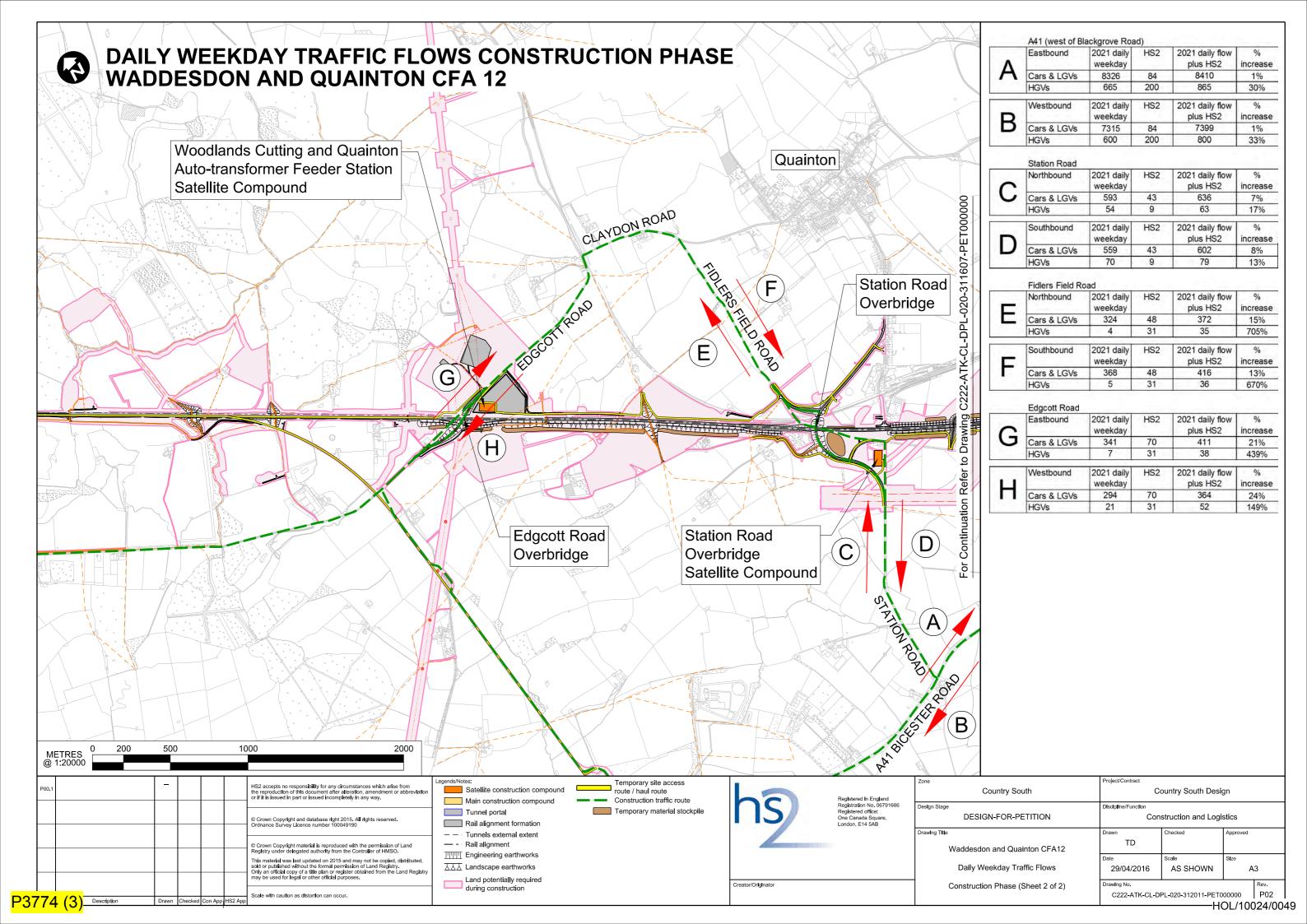


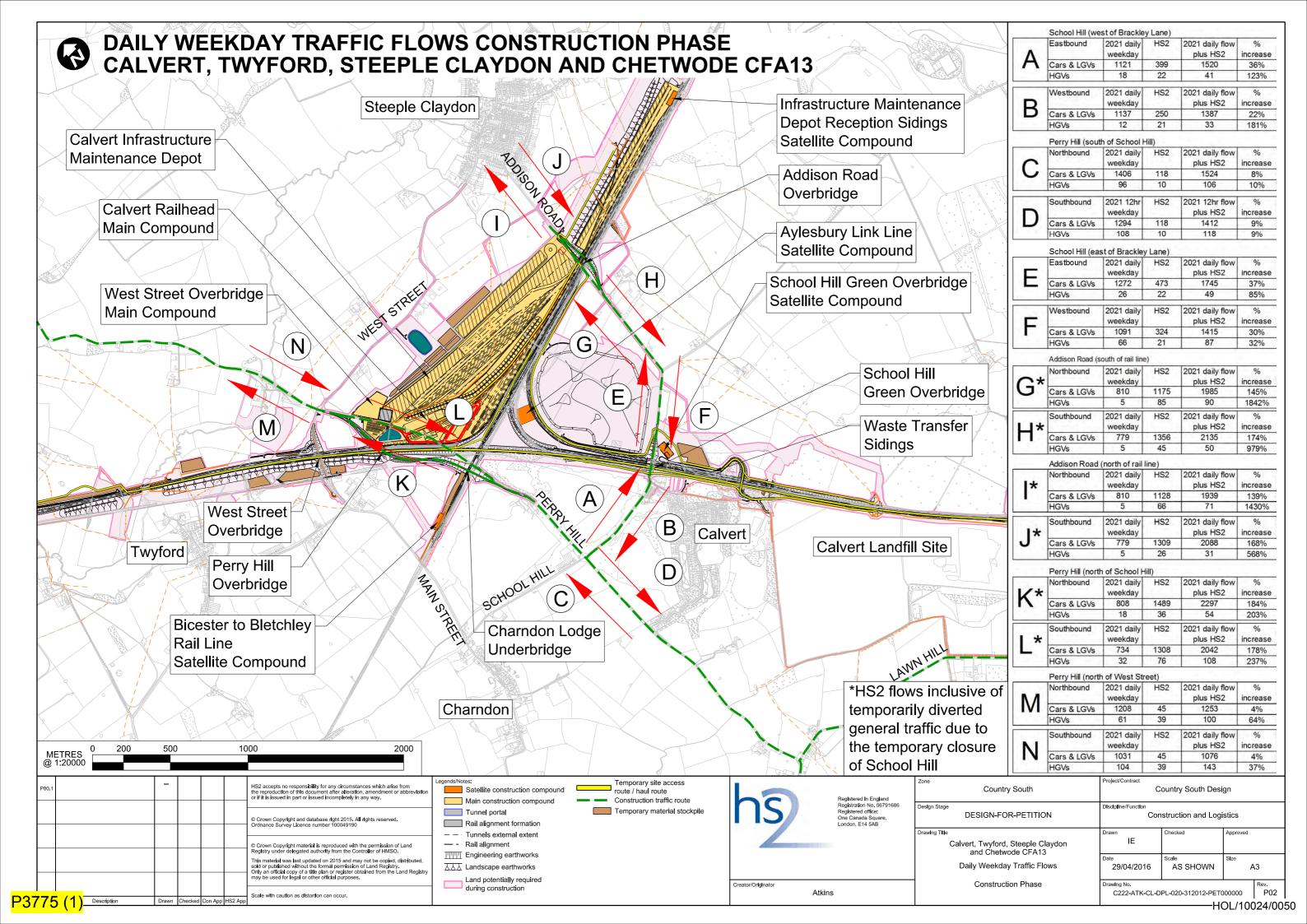


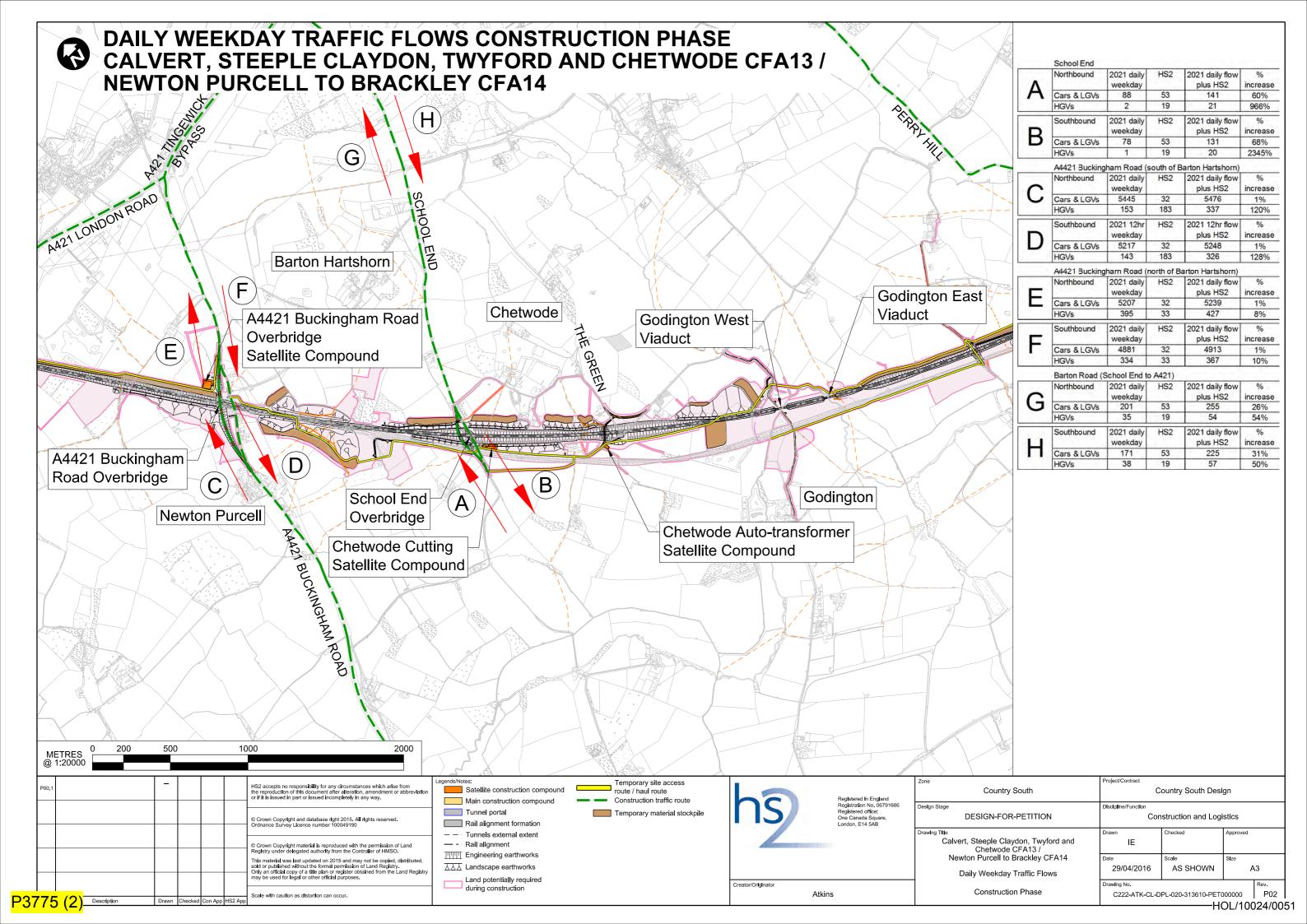


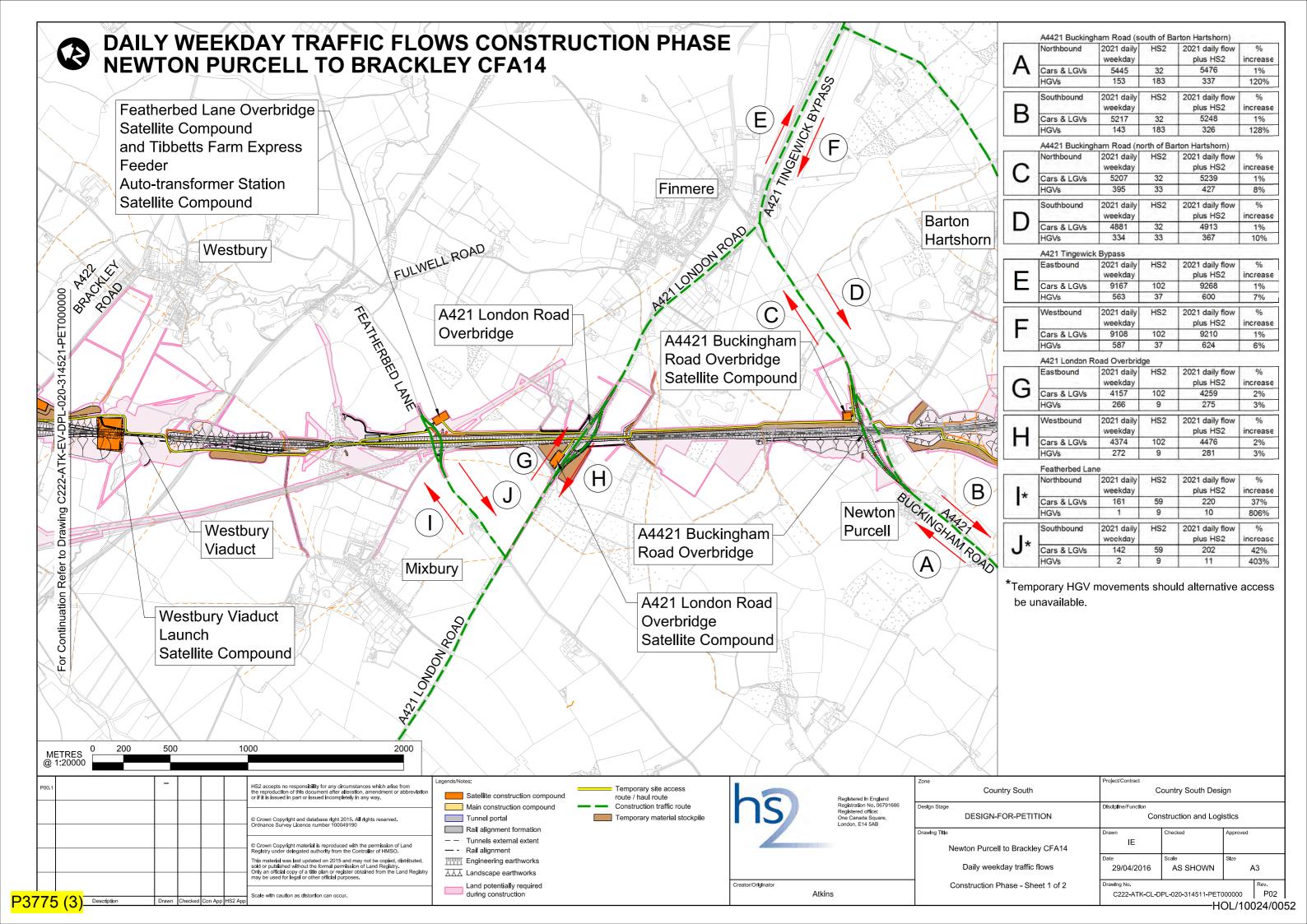


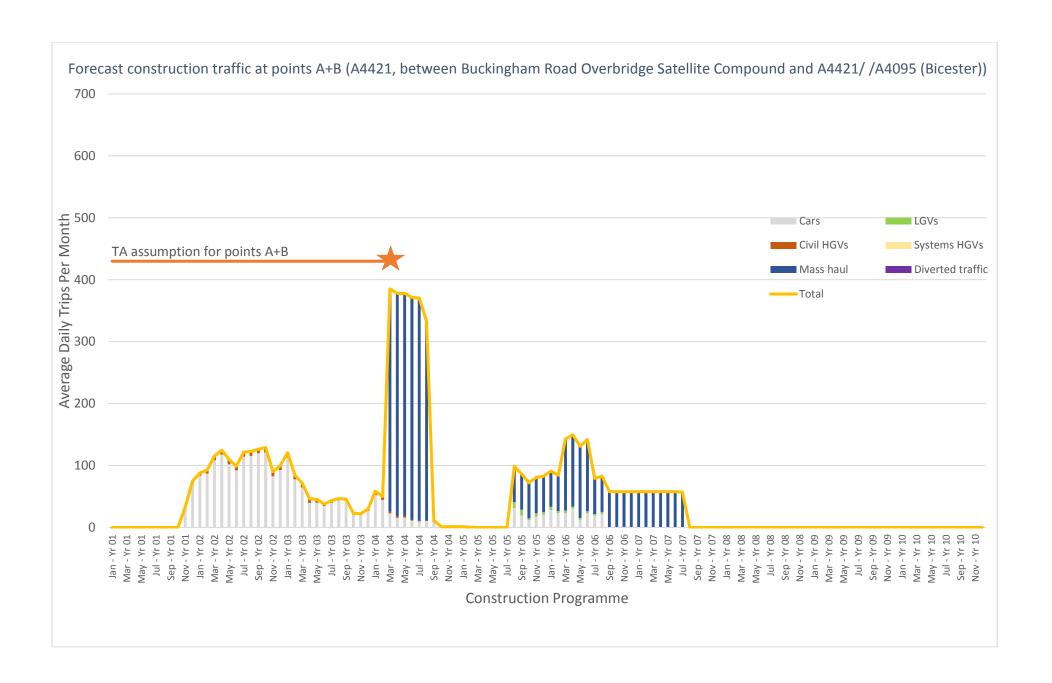


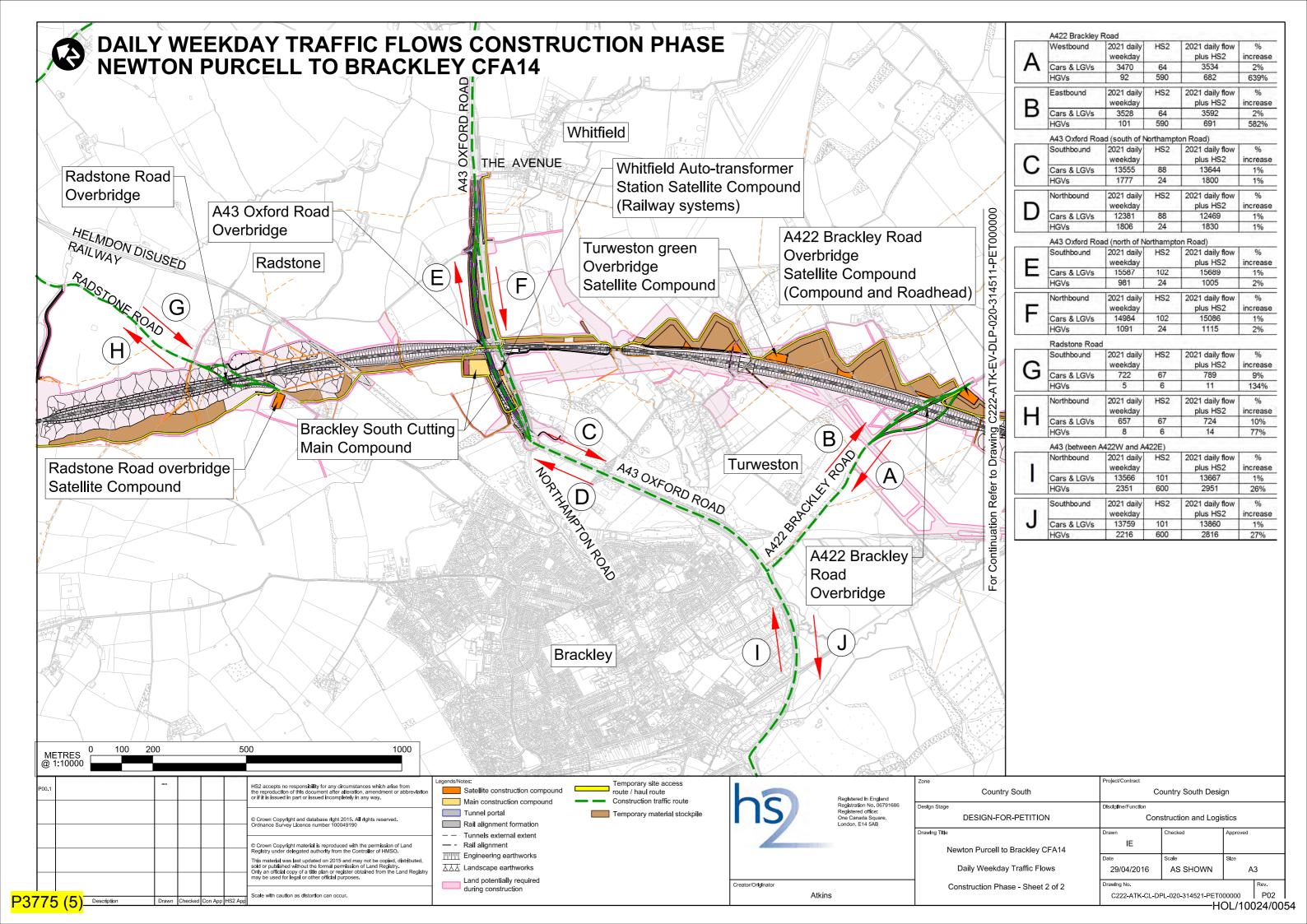












## Route-wide Traffic Management Plan

The CoCP will require the nominated undertaker to prepare a route-wide traffic management plan, in liaison with highway and traffic authorities and the emergency services, will include:

- the means of managing and monitoring lorry flows;
- the requirement for vehicle and driver safety;
- requirements for preparing workforce travel plans;
- the strategy for design and consultation for traffic management (including the signing strategy for emergency service access and lorry wayfinding); and
- the requirements for protecting highways.

A draft route-wide traffic management plan was consulted on with key stakeholders, including all highway authorities along the Phase One route, during 2015 and a final version has been prepared and published:

https://www.gov.uk/government/publications/hs2-phase-one-route-wide-traffic-management-plan

HS2 Information Paper E13: Management of Traffic during construction



## **Local Traffic Management Plan**

The CoCP will require the nominated undertaker to also prepare local traffic management plans, in liaison with the relevant highway and traffic authorities and the emergency services. As appropriate, these will include:

- the contractors' construction traffic flow assumptions;
- the local routes to be used by large goods vehicles (approved where applicable), including lorry holding areas; and
- significant works affecting roads and public rights of way, including temporary and permanent closures and diversions.

HS2 Information Paper E13: Management of Traffic during construction



## Vehicle flows and road safety management, monitoring and control

Construction vehicles and their impact on road safety will be managed, monitored and controlled by:

- a vehicle booking system;
- vehicle flow monitoring;
- vehicle identification;
- driver training in vulnerable road user awareness and rural road driving;
- requirements for vehicle safety equipment and blind spot minimisation;
- the implementation of fleet operator quality schemes; and
- the implementation of route and flow monitoring, including monitoring that
- the driver and vehicle safety requirements are being met.

**HS2 Information Paper E30**: Vehicle flow management and safety requirements during construction



## **Monitoring of Compliance**

Monitoring of compliance will be led by a dedicated monitoring and compliance team employed by the Nominated Undertaker.

The administrators of the vehicle booking system will review contractor performance and compliance with driver and vehicle safety, as well as ensuring that contractors comply with approved lorry routes and relevant undertakings and assurances.

In addition, the compliance team will ensure that HS2's policies and procedures are being adhered to.

**HS2 Information Paper E30**: Vehicle flow management and safety requirements during construction

