

Provincial Over-Size / Over-Weight Network

Operational Review of Highway 14 Service Roads and Staging Area

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Introduction

On July 21, 2020 Council held a public hearing for proposed Bylaw 39-2019, which proposes to create Direct Control District 86 in Land Use Bylaw (LUB) 6-2015 and rezone a portion of the SW 32-51-22-W4 from AG – Agriculture: General to DC 86 – Direct Control District.

The bylaw represents the Applicant's desire to create a transportation staging yard for over-sized and over-weight industrial equipment and modules.

The applicant has indicated that the proposal is intended as a solution to the problem of over-size / over-weight vehicles using the Highway 14 service road near to Range Road 225 to park, store, and transfer their oversize industrial equipment; and indicated that this proposal eliminates current safety risks by removing these vehicles/equipment from public property into a safer, privately monitored and regulated location.

During the public hearing the applicant presented that the current situation of staging the vehicles on the Highway 14 service road is a significant safety concern. As a result, Strathcona County Council requested further information regarding the provincial Over-Size / Over-Weight (OSOW) network and its use of the Highway 14 service road between Range Road 225 and Highway 21 relative to operational concerns raised by the proponent.

This report was prepared in response to Council's request and is presented in the context of the two Highway 14 service roads in terms of their current and future conditions within the provincial OSOW network. It was undertaken after consultation with staff of the Transportation Planning & Engineering, Emergency Services, and RCMP & Enforcement Services departments and representatives of the two Elk Island school boards' student transportation services.

Over-Size / Over-Weight Network

The Alberta government created the provincial OSOW network by Ministerial Order in 1985, formalizing many localized solutions into a province-wide network. Within Strathcona County, the OSOW network utilizes the following provincial highways, as shown in Figure 1:

- Anthony Henday Drive (Highway 216)
 - o Whitemud Drive to Highway 14
- Highway 14
 - o Anthony Henday Drive to Beaver County boundary; excluding the County's jurisdiction on the service road bypass from Range Road 231 to Range Road 225
- Highway 15
 - o City of Fort Saskatchewan boundary to Lamont County boundary
- Highway 21
 - o Highway 14 south to Leduc County boundary
 - o Township Road 534 north to City of Fort Saskatchewan boundary
- Highway 38
 - o Lamont County boundary to Sturgeon County boundary (North Saskatchewan River)
- Highway 830
 - o Highway 15 to Highway 38

Figure 1



Provincial OSOW Network detail encompassing Strathcona County;
Core Routes shown in red, Connector Routes shown in orange

The County supports industry and accommodates the provincial OSOW network through a variety of roadways in the urban and rural service areas. Serving the fabrication businesses and module yards in Strathmoor Industrial and the North of Yellowhead area in addition to the City of Edmonton's Aurum Industrial Park, traffic utilizes a local feeder system of either Broadmoor Boulevard / 17 Street NE north and Aurum Road NE east or Range Road 232 north and Township Road 534 east to connect to the OSOW Connector Network on Highway 21 in order to access destinations to the north.

Of greater importance; the provincial OSOW network utilizes two service roads south of Highway 14 which are in the County's jurisdiction. The Province paid for gravel upgrades to the service roads as a result of the creation of the OSOW network in order to accommodate for increased traffic and heavier axle-weight loads of OSOW traffic. The two service roads are required in order to bypass the Highway 14 / 21 interchange as the current bridge structure does not provide sufficient clearance for east/west/south movements.

The easterly service road, linking from Highway 21 to Range Road 225, is within the OSOW Core Network which is the main intra-provincial movement corridor to points east/west and south via Highways 14 and 21 (refer to Figure 1 in red).

The westerly service road, linking from Range Road 231 to Highway 21, is within the OSOW Connector Network which acts as a feeder system linking from the City of Edmonton via Highway 14, Highway 216, and Whitemud Drive (refer to Figure 1 in orange).

In addition to the OSOW Network segments, the easterly service road also accommodates for a staging area, necessary for loads exiting / entering the City of Edmonton, as movements on the Connector Network exiting the city must occur at night while the Core Network only operates during daylight hours. The Connector Network utilizes many sections of Whitemud Drive, Anthony Henday Drive and Highway 14 in a counter-flow manner with pilot vehicles and police escort to bypass a number of other bridge structures and also requires a number of traffic signal pole turns. To accommodate for the time disparity between the two movement windows of nighttime Connector and daytime Core, loads may be parked in the staging area either for a few hours, over a 24+ hour period, or occasionally due to

mandated crew duty cycles, weather constraints, or competing traffic OSOW Network traffic, for 48+ hours. The staging area also permits for occasional parking for Core Network movements due to similar emergent needs. The safety of this staging area is the impetus of the proponent's proposal as represented by Bylaw 39-2019.

The staging area was created in support of industry in 1998, paid for by Alberta Transportation and constructed by the County, to increase safety and prevent the two service road segments being impeded by the operations on the Connector Network, as well as to increase the safety of the ingress / egress manoeuvre to Highway 14, especially in the westbound direction which was otherwise a slow and problematic manoeuvre. It is approximately 150 metres long and 10 metres wide at its narrowest point, widening substantially closer to Range Road 225 to improve ingress / egress to Highway 14. It is located adjacent to the 7.0 to 7.5 metre wide service road (refer to Figure 2).

Figure 2



OSOW Staging Area on Highway 14 service road west of Range Road 225 (circa 2017) clearly distinguished between a freshly dust-suppressed 7.0 to 7.5 metre wide service road and an untreated gravel staging area.

Existing Conditions

The most-recent traffic counts on the two Highway 14 service roads are presented relative to the number of residences on each service road and the current patronage of the two Elk Island school board's student transportation system. The north end of Range Roads 225 and 231 near Highway 14 are also presented.

East Service Road (Range Road 225 to Highway 21)

- Current traffic counts are 31 (2015, east of Highway 21) and 69 (2019, west of Range Road 225) vehicles per day
- Seven privately titled parcels gain access from the service road, six residences exist while one parcel is undeveloped
- Elk Island Public Schools has one client site on this roadway, resulting in one bus, twice daily
- Elk Island Catholic Schools has no clients on this roadway and does not use it in their routing
- The Francophone board has no clients on this roadway and does not use in their routing

West Service Road (Highway 21 to Range Road 231)

- Current traffic counts are 4 (2015, east of Range Road 231) and 16 (2015, west of Highway 21) vehicles per day
- Five privately titled parcels gain access from the service road, three residences exist while two parcels are undeveloped
- Elk Island Public Schools has no clients on this roadway and does not use it in their routing
- Elk Island Catholic Schools has no clients on this roadway and does not use it in their routing
- The Francophone board has no clients on this roadway and does not use it in their routing

Range Road 225

- Current traffic count is 419 (2019, south of Highway 14) vehicles per day
- Elk Island Public Schools routes six busses on Range Road 225 to/from Highway 14, twice daily
- Elk Island Catholic Schools has no busses on Range Road 225
- The Francophone board has no busses on Range Road 225

Range Road 231

- Current traffic count is 1,288 (2019, south of Highway 14) vehicles per day

The industry standard 10-year collision history (2011-2020) was reviewed. **No reported collisions were found through the full length of the two Highway 14 Service Roads and their respective intersections with either Highways 14 or 21 relative to OSOW movements.** Below is the history of collisions occurring in the area:

Highway 14 / Range Road 225 intersection (within a radius of 100 metres):

- Six right-angle collisions (two each in 2011, 2012, and 2013)
 - o the most-recent 2013 collision involved a semi-trailer truck and school bus and was due to a stop sign violation
- Two single-vehicle animal strikes (2017)
- One rear-end collision (2020)
- No crashes related to OSOW movements

Range Road 225 south of Highway 14:

- One single-vehicle drive off road collision (2011 to left)
 - o located 85 metres south of the Service Road intersection
- No crashes related to OSOW movements

East Service Road (Range Road 225 to Highway 21):

- No recorded collisions of any type

Highway 21 / East & West Service Roads intersection (within a radius of 100 metres):

- One right-angle collision (2014)
- One rear-end collision (2014)
- No crashes related to OSOW movements

West Service Road (Highway 21 to Range Road 231):

- Two eastbound single-vehicle drive off road collisions (2015 to right, and 2019 to right)
- No crashes related to OSOW movements

Highway 14 / Range Road 231 intersection (within a radius of 100 metres):

- Nine right-angle collisions (2011, two in 2014, 2015, 2016, two in 2017, 2018, and 2020)
- Three rear-end collisions (2014, 2018, 2019)
- Three animal strike collisions (two in 2013, and 2015)
- Two left-turn across path collisions (2014, and 2019)
- Two single vehicle drive off road collisions (2014 to left, and 2018 to right)
- One right-turn / passing collision (2014)
- One struck object collision (2013)
- No crashes related to OSOW movements

The above crash rates are not inconsistent with other grid roads intersecting divided highways.

OSOW Traffic Control and Enforcement

The photos supplied by the proponent of Bylaw 39-2019 during the July 21, 2020 Public Hearing exemplified conditions of the subject staging area prior to the end of 2018. Since that time, the Transportation & Agriculture Services (TAS) department undertook measures to limit those occurrences by installing six **No Parking Without Permit** signs (refer to Figure 3) throughout the staging area (on both sides of the roadway) on October 25, 2018 commensurate with an increase in parking enforcement actions by the RCMP & Enforcement Services department.

Figure 3



One of six No Parking Without Permit signs located along the staging area and Highway 14 service road.

The permitting of over-size / over-weight loads is a requirement by Alberta Transportation via the online Transportation Routing and Vehicle Information System (TRAVIS). Permit applications are made by transport companies and reviewed by both Alberta Transportation and each municipality through which a load travels, whether solely on provincial highways or on local roads. As Strathcona County has direct jurisdiction of the two Highway 14 service roads, we review each permit thoroughly. A permanent staff position was created in 2009 within the TAS department to undertake this role among other commercial transport permitting and road use agreement duties.

In addition to the no parking signs and increased patrols, more stringent parking permit conditions were added into the TRAVIS system effective December 2018; restricting parked loads solely to users of the OSOW Connector Network (nighttime movement requiring parking to daylight conditions) and within the staging area only. The parking permit must be clearly displayed, and enforcement patrols monitor the situation. Not all TRAVIS permit applications requesting parking result in permits being granted, as opportunities exist elsewhere along the Core Network (the nearest being in Nisku on Highway 625).

Subsequent to these recent improvements, conditions on the service roads and staging area have greatly improved. Unlawful users of the staging area do occur, and County staff continue to work towards improvements; most recently in the form of installing traffic cameras to catalogue and validate these occurrences for educational opportunities by TAS staff to transport companies, feedback to Alberta Transportation, and possible enforcement action by the RCMP & Enforcement Services department.

Should an unforeseen incident such as mechanical breakdown, weather-related hold-up, or other instance occur to the staging area and/or service roads which would negatively impact regular and/or OSOW traffic, two protocols are triggered:

- 1) The road segment would be flagged in the TRAVIS permitting system and all affected permit holders impacted would be notified of restriction and would be delayed and/or rescheduled accordingly.
- 2) An emergent traffic disruption or road closure notification would be sent via e-mail to all subscribed agencies and the County's Traffic Disruptions Calendar webpage would be updated.

All planned and emergent traffic disruptions or road closures notification on County roadways are listed at <https://www.strathcona.ca/transportation-roads/traffic/traffic/>. The associated free e-mail service, known as TRUMBA, may be subscribed to by any interested agency or person. The County's Emergency Services (fire and ambulance) and RCMP & Enforcement Services departments in addition to both Elk Island school divisions' student transportation systems are registered TRUMBA subscribers.

In preparing this report, the County's Transportation Planning & Engineering, Emergency Services, and RCMP & Enforcement Services departments in addition to the Elk Island Public School's student transportation services (being the school board with an active client accessed by the service road) were consulted. Given that the service roads are accessible from either end, it has been confirmed that neither have raised any concerns with on-going operations on the service road and the staging area, as accommodations can be adopted by those agencies in their routing accordingly should local conditions warrant.

OSOW Network Improvements

In efforts to increase the safety and efficiency of the OSOW network, recent upgrades have been utilized and medium-term and long-term place that impact existing infrastructure in the area as well as the overall OSOW network have been discussed with Alberta Transportation. Below is a summary of these items:

2018 Upgrades:

During the preliminary design phase of IPL's Heartland Petrochemical Complex (HPC) the future impacts of the five large loads were being realized via their routing out of the City of Edmonton via the OSOW Connector Network to the staging area with a 24+ hour stop, then east to Tofield, north to Lamont with an overnight stop, and west to Fort Saskatchewan via the OSOW Core, and north on Range Road 220 with two Canadian National Railway crossings to the site.

These loads, ranging from 96 metres to 179 metres in length could navigate the two Highway 14 service roads, but the manoeuvrability was such that Highway 21 would have to be closed for a significant period of time as the loads carefully navigated the reverse curve crossing. Alberta Transportation would not permit this condition, so alternatives were sought, in partnership with Alberta Transportation, Strathcona County, IPL and its engineering consultants, and the transport contractor. The resulting method for these movements was to connect the eastbound Highway 14 off-ramp to northbound Highway 21 off-ramp within the interchange to create an eastbound bypass and to provide a slip-ramp from Highway 14 directly to the service road in the vicinity of the staging area (refer to Figures 4a and 4b).

Figure 4a



Highway 14 / Highway 21 interchange connection (an approximate 65 metre segment) linking the eastbound off-ramp to the northbound off-ramp to create an eastbound bypass.

Figure 4b



Highway 14 slip ramp (an approximate 50 metre segment) allowing for direct access to the service road and staging area.

Permits were granted by Alberta Transportation to IPL for the two segments of infrastructure and revised OSOW movements for the project's duration, and stipulated removal by October 31, 2020. Once the infrastructure was in-situ, many OSOW carriers inquired with the County whether it could be utilized for their needs, which had to be referred to IPL. Unfortunately, the conditions of their permit restricted the usage solely to IPL.

The five large loads moved during the HPC project were a learning experience for all parties involved (owner, transport operator, Alberta Transportation, and Strathcona County via the TAS, RCMP & Enforcement Services, and Emergency Services departments) as loads of these dimensions have never been experienced before. After each successive IPL module was parked in the staging area, TRAVIS and parking permit conditions were strengthened for successive moves as the project progressed. Each individual load received significant media and public attention, from the commencement of their moves from fabrication yards in the City of Edmonton, the stop in the Highway 14 staging area, the overnight stop in Lamont, and along the entire route to the HPC plant site. No incidents were reported in Strathcona County despite the crowds that the loads drew.

2020/2021 Upgrades:

Based on OSOW carrier inquiries, the County began discussions with IPL and Alberta Transportation in 2019 to leverage the two segments of infrastructure constructed by IPL in 2018, and the County has successfully been granted permits by Alberta Transportation to maintain and operate the linkage in the Highway 14 / 21 interchange and the slip-ramp off Highway 14 leading directly to the staging area. The TAS department is currently in the process of paving the segment in the interchange and installing gates in both segments and will commence operating the gates in the late 2020 / early 2021 after final details are resolved with respect to TRAVIS permitting and our commercial transport counterparts in the City of Edmonton. Alberta Transportation will undertake changes to the provincial OSOW network and TRAVIS permitting system to route eastbound movements from the city on the Connector Route to remain on Highway 14; **directing that all eastbound OSOW movements will no longer utilize the two service roads excepting the easterly 320 metres from the slip-ramp to the staging area near to Range Road 225.** The result will be that approximately 4.0 kilometres of service road will be removed from that movement routing, and that only one private property gaining access to the service road, rather than the existing 12, will remain in close proximity to the staging activities as all eastbound movements will remain on Highway 14. Refer to Figures 5a and 5b for the current and future movement routing.

Westbound movements from the staging area into the City of Edmonton via the OSOW Connector Network (an exceedingly rare occurrence) will continue to utilize both service roads as Alberta Transportation will not permit counter-flow operations on Highway 14 to circumvent the interchange at Highway 21. OSOW Core Network movements from Highway 14 to Highway 21 southbound will continue to utilize the easterly service road as the current interchange does not permit this left turn manoeuvre.

Figure 5a



Existing OSOW Connector Network movement route via the two Highway 14 service roads from Range Road 231 to the staging area near Range Road 225. Approximate service road length utilized is 4.3 kilometres, fronting 12 titled parcels.

Figure 5b



Future OSOW Connector Network movement route via Highway 14 / 21 interchange bypass and Highway 14 slip ramp with direct access to the service road and staging area near Range Road 225. Approximate service road length utilized is 320 metres, fronting one titled parcel.

Future OSOW Upgrade Plans (Medium-Term):

The County continues to work with Alberta Transportation via the Carrier & Vehicle Safety (Red Deer), Network & Highway Planning (Twin Atria), Infrastructure (Barrhead), and Operations (Stony Plain) departments with respect to the OSOW routes, safety, and upgrades. The County's jurisdictional takeover of the IPL infrastructure in 2020 is a near-term improvement to the existing staging area, improving access and lessening OSOW traffic on all but the easterly 320 metres. Discussions on medium-term solutions to the location of the staging area continue in the hopes of the Province taking over the management of this important piece of infrastructure in an alternate location.

Future OSOW Upgrade Plans (Long-Term):

When the existing Highway 14 / 21 interchange reaches the end of its useful life and requires replacement, it will be designed to accommodate for all directions of OSOW movements. **Once improved, the OSOW networks will no longer utilize either of the two service roads in any direction.** Alberta Transportation design philosophy with highway interchanges is to prohibit any direct highway access within 2.0 kilometres. Currently, the intersection of Township Road 520 and Highway 21 is under scrutiny to be restricted, and the intersection of Range Road 231 and Highway 14 has previously been identified for long-term closure by Alberta Transportation circa 2016. The Province already owns lands to facilitate the relocation of the intersection of the service roads and Highway 21 further south. Undeveloped service road right-of-way is dedicated between Range Roads 225 and 224 south of Highway 14 in all but the parcel subject to proposed Bylaw 39-2019, to facilitate a potential extension of the service road and enable the closure of the intersection of Range Road 225 on Highway 14.

It is important to note that the province has not scheduled a functional planning study or design study of this interchange, and its replacement remains many years away, but these are projected outcomes based on known Provincial criteria and interchange design standards.

Summary

The Highway 14 service roads and the staging area form an integral component to the provincial Over-Size / Over-Weight transportation network for intra-provincial equipment and module movements for industries within the Alberta Industrial Heartland Area and elsewhere throughout Alberta. Their use is a long-standing partnership between the Province and County; subject to Ministerial Order in 1985, Provincial funding, and County management.

OSOW movements are permitted and controlled in their usage of the service roads and staging area, and Strathcona County manages those users through active review of all TRAVIS permits and controls use of the staging area. Incremental improvements to the staging area continue to be undertaken and a significant change in the Connector Network route will occur in late-2020 / early-2021, whereby the majority of the service roads will no longer be in use for a significant number of movements.

The staging area remains free of charge for use to OSOW carriers and industry. Use of this location will continue to be utilized until relocated through the efforts of Alberta Transportation and the County, either prior to, or as part of the Highway 14 / 21 interchange replacement.

There are no reported collisions in the last 10 years as a result of any OSOW movements on either service road or local to the staging area. Operation of the service road and staging area continues to be monitored and improved when operational issues arise.

The County's TRUMBA notification system is in place to ensure any traffic disruptions and/or road closures are communicated to subscribers including the Emergency Services and RCMP & Enforcement Services departments, and the school bus providers for the area. Available access at either end of the service roads enables emergency response to be correctly dispatched and performed should the need arise during an unscheduled event occurring with an OSOW vehicle along the service road.

The public and industry are safer with the existing staging area facility located on the service road as it is directly in-line with the OSOW routes, not requiring any extreme manoeuvres for ingress or egress. The service road has little in the way of traffic volume (69 vehicles per day) and one school bus, and thereby affects few residents and roadway users. Its use remains provincially / municipally permitted and enforced as compared to the proponent's site on Range Road 225, which exhibits six times as much traffic (419 vehicles per day) and six school busses. The Emergency Services and RCMP & Enforcement Services departments do not consider the existing staging area on the service road to be mis-managed or a concern.

Alberta Transportation noted – confirmed by the applicant during the Public Hearing – that the proposed north access to the site from Range Road 225 (located directly opposite to the end of the service road) is considered temporary and would be closed in the future. Without this access, sole access to the site, located further south on Range Road 225, presents a challenging manoeuvre for the design vehicle potentially resulting in delays on Highway 14 and Range Road 225. Those delays could negatively impact emergency service response, school bus traffic, and local road users on a roadway with six times the traffic as compared to the service road. The proposed site access would also not support OSOW traffic of the size recently seen in the staging area in 2019 and 2020.

Conclusion

Given the improvements completed since 2018 and the regulatory, notification, and enforcement processes in place, the operation of the staging area in its current location is a safe practice.

Furthermore, considering the challenges expressed by Alberta Transportation and County Administration on providing a staging area at an alternative site in the area, as well as the future plans for the OSOW network, it is Administration's opinion that the current method of staging OSOW vehicles combined with the ability to regulate the users provides a safer method than an alternate private site in the area.